TITLE 327 WATER POLLUTION CONTROL BOARD

Proposed Rule as Preliminarily Adopted
LSA Document #11-320

DIGEST

Amends 327 IAC 2-1-6, 327 IAC 2-1-8.2, 327 IAC 2-1-8.3, 327 IAC 2-1.5-8, 327 IAC 5-2-11.4, 327 IAC 5-2-11.5, and 327 IAC 5-2-11.6 concerning surface water quality criteria for chloride and sulfate. Effective 30 days after filing with the Publisher.

HISTORY

First Notice of Comment Period: June 1, 2011, Indiana Register (DIN: 20110601-IR-327110320FNA).

Second Notice of Comment Period: November 16, 2011, Indiana Register (DIN: 20111116-IR-327110320SNA).

Notice of Public Hearing: November 16, 2011, Indiana Register (DIN: 20111116-IR-327110320PHA).

Change in Notice of Public Hearing: January 18, 2012, Indiana Register (DIN: 20120118-IR-327110320CHA).

Date of First Public Hearing: March 14, 2012.

Proposed Rule: April 25, 2012, Indiana Register (DIN: 20120425-IR-327110320PRA).

Notice of Public Hearing: April 25, 2012, Indiana Register (DIN: 20120425-IR-327110320PHA).

327 IAC 2-1-6
327 IAC 2-1-8.2
327 IAC 2-1-8.3
327 IAC 2-1.5-8
327 IAC 5-2-11.4
327 IAC 5-2-11.5
327 IAC 5-2-11.6

SECTION 1. 327 IAC 2-1-6 IS AMENDED TO READ AS FOLLOWS:

327 IAC 2-1-6 Minimum surface water quality standards

Authority: IC 13-14-8; IC 13-14-9; IC 13-18-3
Affected: IC 13-11-2-258; IC 13-18-4; IC 13-30-2-1; IC 14-22-9

Sec. 6. (a) The following are minimum surface water quality conditions:

(1) All surface waters at all times and at all places, including waters within the mixing zone, shall meet the minimum conditions of being free from substances, materials, floating debris, oil, or scum attributable to municipal, industrial, agricultural, and other land use practices, or other discharges that do any of the following:

(A) Will settle to form putrescent or otherwise objectionable deposits.

(B) Are in amounts sufficient to be unsightly or deleterious.

(C) Produce:

(i) color;

(ii) visible oil sheen;

(iii) odor; or

(iv) other conditions;

in such degree as to create a nuisance.

(D) Are in concentrations or combinations that will cause or contribute to the growth of aquatic plants or algae to such degree as to:

(i) create a nuisance;

(ii) be unsightly; or

(iii) otherwise impair the designated uses.

(E) Are in amounts sufficient to be acutely toxic to, or to otherwise severely injure or kill, aquatic life, other animals, plants, or humans. To assure protection of aquatic life, concentrations of toxic substances shall not exceed the final acute value (FAV = 2 (AAC)) in the undiluted discharge or the acute aquatic criterion (AAC) outside the zone of initial dilution or, if applicable, the zone of discharge-induced mixing:

(i) for certain substances, an AAC is established and set forth in subdivision (3), Table 6-1**,** ~~and~~ subdivision (3), Table 6-2 (which table incorporates subdivision (4), Table 6-3)**, and subdivision (5);**

(ii) for substances for which an AAC is not specified in subdivision (3), Table 6-1**,** ~~or~~ subdivision (3), Table 6-2, **or subdivision (5),** an AAC can be calculated by the commissioner using the procedures in section 8.2 of this rule; and

(iii) the AAC determined under item (i) or (ii) may be modified on a site-specific basis to reflect local conditions in accordance with section 8.9 of this rule.

This clause shall not apply to the chemical control of plants and animals when that control is performed in compliance with approval conditions specified by the Indiana department of natural resources as provided by IC 14-22-9.

(2) At all times, all surface waters outside of mixing zones shall be free of substances in concentrations that on the basis of available scientific data are believed to be sufficient to injure, be chronically toxic to, or be carcinogenic, mutagenic, or teratogenic to humans, animals, aquatic life, or plants. To assure protection against the adverse effects identified in this subdivision, the following requirements are established:

(A) A toxic substance or pollutant shall not be present in such waters in concentrations that exceed the most stringent of the following continuous criterion concentrations (CCCs):

(i) A chronic aquatic criterion (CAC) to protect aquatic life from chronic toxic effects.

(ii) A terrestrial life cycle safe concentration (TLSC) to protect terrestrial organisms from toxic effects that may result from the consumption of aquatic organisms or water from the waterbody.

(iii) A human life cycle safe concentration (HLSC) to protect human health from toxic effects that may result from the consumption of aquatic organisms or drinking water from the waterbody.

(iv) For carcinogenic substances, a criterion to protect human health from unacceptable cancer risk of greater than one (1) additional occurrence of cancer per one hundred thousand (100,000) population.

(B) For certain substances, one (1) or more of the CCCs identified in clause (A) are established and set forth in subdivision (3), Table 6-1**,** ~~and~~ subdivision (3), Table 6-2 (which table incorporates subdivision (4), Table 6-3)**, and subdivision (5).**

(C) For substances for which one (1) or more of the CCCs identified in clause (A)

are not specified in subdivision (3), Table 6-1**,** ~~or~~ subdivision (3), Table 6-2, **or subdivision (5),** such criterion or criteria may be calculated by the commissioner using the corresponding procedures prescribed by sections 8.3 through 8.6 of this rule.

(D) A CCC determined under clause (B) or (C) may be modified on a site-specific basis to reflect local conditions in accordance with section 8.9 of this rule.

(E) The CAC and TLSC for a substance apply in all surface waters outside a mixing zone for a discharge of that substance. Similarly, in waters where a public water system intake is not present or is unaffected by the discharge of a substance, the HLSC and the carcinogenic criterion for that substance based on consumption of organisms from the waterbody and only incidental ingestion of water shall apply to all surface waters outside the mixing zone for a discharge of that substance. In surface waters where a public water system intake is present, the HLSC and the carcinogenic criterion for a substance based on consumption of organisms and potable water from the waterbody shall apply at the point of the public water system intake.

(3) The following establishes surface water quality criteria for specific substances:

Table 6-1

Surface Water Quality Criteria for Specific Substances

AAC (Maximum)	CCC		
	Outside of Mixing Zone		Point of Water Intake
Substances	Aquatic Life (CAC) (4-Day Average)	Human Health (30-Day Average)	Human Health (30-Day Average)
Metals (µg/l) (Total recoverable)			
Antimony		45,000 (T)	146 (T)
Arsenic (III)	#	#	0.175 (C)	0.022 (C)
Barium			1,000 (D)
Beryllium		1.17 (C)	0.068 (C)
Cadmium	#	#	10 (D)
Chromium (III)	#	#	3,433,000 (T)	170,000 (T)
Chromium (VI)	#	#	50 (D)
Copper	#	#	
Lead	#	#	50 (D)
Mercury$	2.4	0.012	0.15 (T)	0.14 (T)
Nickel	#	#	100 (T)	13.4 (T)
Selenium	130*	35	10 (D)
Silver	#		50 (D)
Thallium		48 (T)	13 (T)
Zinc	#	#	
Organics (µg/l)			
Acrolein		780 (T)	320 (T)
Acrylonitrile		6.5 (C)	0.58 (C)
Aldrin$	1.5*	0.00079 (C)	0.00074 (C)
Benzene		400 (C)	6.6 (C)

Benzidine			0.0053 (C)	0.0012 (C)
Carbon Tetrachloride			69.4 (C)	4.0 (C)
Chlordane$	1.2*	0.0043	0.0048 (C)	0.0046 (C)
Chlorinated Benzenes				
Monochlorobenzene				488 (T)
1,2,4,5-Tetrachlorobenzene $			48 (T)	38 (T)
Pentachlorobenzene $			85 (T)	74 (T)
Hexachlorbenzene$			0.0074 (C)	0.0072 (C)
Chlorinated Ethanes				
1,2-dichloroethane			2,430 (C)	9.4 (C)
1,1,1-trichloroethane			1,030,000 (T)	18,400 (T)
1,1,2-trichloroethane			418 (C)	6.0 (C)
1,1,2,2-tetrachloroethane			107 (C)	1.7 (C)
Hexachloroethane			87.4 (C)	19 (C)
Chlorinated Phenols				
2,4,5-trichlorophenol				2,600 (T)
2,4,6-trichlorophenol			36 (C)	12 (C)
Chloroalkyl Ethers				
bis(2-chloroisopropyl) ether			4,360 (T)	34.7 (T)
bis(chloromethyl) ether			0.018 (C)	0.000038 (C)
bis(2-chloroethyl) ether			13.6 (C)	0.3 (C)
Chloroform			157 (C)	1.9 (C)
Chlorpyrifos	0.083	0.041		
DDT$	0.55*	0.0010	0.00024 (C)	0.00024 (C)
Dichlorobenzenes			2,600 (T)	400 (T)
Dichlorobenzidine			0.2 (C)	0.1 (C)
1,1-dichloroethylene			18.5 (C)	0.33 (C)
2,4-dichlorophenol				3,090 (T)
Dichloropropenes			14,100 (T)	87 (T)
Dieldrin$	1.3*	0.0019	0.00076 (C)	0.00071 (C)
2,4-dinitrotoluene			91 (C)	1.1 (C)
Dioxin (2,3,7,8-TCDD)$			0.0000001 (C)	0.0000001 (C)
1,2-diphenylhydrazine			5.6 (C)	0.422 (C)
Endosulfan	0.11*	0.056	159 (T)	74 (T)
Endrin$	0.09*	0.0023		1.0 (D)
Ethylbenzene			3,280 (T)	1,400 (T)
Fluoranthene			54 (T)	42 (T)
Halomethanes			157 (C)	1.9 (C)
Heptachlor$	0.26*	0.0038	0.0028 (C)	0.0028 (C)
Hexachlorobutadiene$			500 (C)	4.47 (C)
Hexachlorocyclohexane (HCH)				
alpha HCH$			0.31 (C)	0.09 (C)
beta HCH$			0.55 (C)	0.16 (C)
gamma HCH (Lindane)$	1.0*	0.080	0.63 (C)	0.19 (C)
Technical HCH$			0.41 (C)	0.12 (C)
Hexachlorocyclopentadiene				206 (T)

Isophorone			520,000 (T)	5,200 (T)
Nitrobenzene				19,800 (T)
Nitrophenols				
4,6-dinitro-o-cresol			765 (T)	13.4 (T)
Dinitrophenol			14,300 (T)	70 (T)
Nitrosamines				
N-nitrosodiethylamine			12.4 (C)	0.008 (C)
N-nitrosodimethylamine			160 (C)	0.014 (C)
N-nitrosodibutylamine			5.9 (C)	0.064 (C)
N-nitrosodiphenylamine			161 (C)	49 (C)
N-nitrosopyrrolidine			919 (C)	0.16 (C)
Parathion	0.065	0.013		
Pentachlorophenol	$e^{(1.005\ [pH]-4.830)}$	$e^{(1.005\ [pH]-5.290)}$		1,000 (T)
Phenol				3,500 (T)
Phthalate Esters				
Dimethyl phthalate			2,900,000 (T)	313,000 (T)
Diethyl phthalate			1,800,000 (T)	350,000 (T)
Dibutyl phthalate			154,000 (T)	34,000 (T)
Di-2-ethylhexyl phthalate			50,000 (T)	15,000 (T)
Polychlorinated Biphenyls (PCBs)$		0.014	0.00079 (C)	0.00079 (C)
Carcinogenic Polynuclear Aromatic Hydrocarbons (PAHs)			0.31 (C)	0.028 (C)
Tetrachloroethylene			88.5 (C)	8 (C)
Toluene			424,000 (T)	14,300 (T)
Toxaphene$	0.73	0.0002	0.0073 (C)	0.0071 (C)
Trichloroethylene			807 (C)	27 (C)
Vinyl Chloride			5,246 (C)	20 (C)
Other Substances				
Asbestos (fibers/liter)				300,000 (C)
Chloride (mg/l)	~~860~~ **	~~230~~ **		
Chlorine (Total Residual) (µg/l)	19	11		
Chlorine[a] (mg/l) (intermittent, total residual)		0.2		
Cyanide (Free) (µg/l)	22	5.2		
Cyanide (Total) (µg/l)				200 (D)
Nitrate-N + Nitrite-N (mg/l)				10 (D)
Nitrite-N (mg/l)				1.0 (D)

Fluoride shall not exceed two (2.0) mg/l in all surface waters outside of the mixing zone except the Ohio River and Interstate Wabash River where it shall not exceed one (1.0) mg/l outside of the mixing zone.

Sulfate shall not exceed the criteria established in subdivision ~~(5)~~ **(6)** in all surface waters outside of the mixing zone.

#The AAC and CAC for this substance are established in Table 6-2.

*One-half (½) of the final acute value (FAV) as calculated by procedures developed by

U.S. EPA in 1980. This value would correspond to acute aquatic values calculated using IDEM procedures or U.S. EPA procedures developed in 1985 in which the calculated FAV is divided by two (2) to reduce acute toxicity.

****The AAC and CAC for this substance are established in subdivision (5).**

T derived from threshold toxicity.

C derived from nonthreshold cancer risk.

D derived from drinking water standards, equal to or less than threshold toxicity.

$This substance is a bioaccumulative chemical of concern.

[a]To be considered an intermittent discharge, total residual chlorine shall not be detected in the discharge for a period of more than forty (40) minutes in duration, and such periods shall be separated by at least five (5) hours.

Table 6-2

Surface Water Quality Criteria for Specific Substances

Substances	AAC (Maximum) (µg/l)	AAC Conversion Factors	CAC (4-Day Average) (µg/l)	CAC Conversion Factors
Metals (dissolved)[1]				
Arsenic (III)	WER[2](360)	1.000	WER[2](190)	1.000
Cadmium	WER[2]($e^{(1.128 [\ln(\text{hardness})]-3.828)}$)	1.136672-[(ln hardness)(0.041838)]	WER[2]($e^{(0.7852 [\ln(\text{hardness})]-3.490)}$)	1.101672-[(ln hardness)(0.041838)]
Chromium (III)	WER[2]($e^{(0.819 [\ln(\text{hardness})]+3.688)}$)	0.316	WER[2]($e^{(0.8190 [\ln(\text{hardness})]+1.561)}$)	0.860
Chromium (VI)	WER[2](16)	0.982	WER[2](11)	0.962
Copper	WER[2]($e^{(0.9422 [\ln(\text{hardness})]-1.464)}$)	0.960	WER[2]($e^{(0.8545 [\ln(\text{hardness})]-1.465)}$)	0.960
Lead	WER[2]($e^{(1.273 [\ln(\text{hardness})]-1.460)}$)	1.46203-[(ln hardness)(0.145712)]	WER[2]($e^{(1.273 [\ln(\text{hardness})]-4.705)}$)	1.46203-[(ln hardness)(0.145712)]
Nickel	WER[2]($e^{(0.8460 [\ln(\text{hardness})]+3.3612)}$)	0.998	WER[2]($e^{(0.8460 [\ln(\text{hardness})]+1.1645)}$)	0.997
Silver	WER[2]($e^{(1.72 [\ln(\text{hardness})]-6.52)}/2$[3])	0.85		
Zinc	WER[2]($e^{(0.8473 [\ln(\text{hardness})]+0.8604)}$)	0.978	WER[2]($e^{(0.8473 [\ln(\text{hardness})]+0.7614)}$)	0.986

[1] The AAC and CAC columns of this table contain total recoverable metals criteria (numeric and hardness-based). The criterion for the dissolved metal is calculated by multiplying the appropriate conversion factor by the AAC or CAC. This dissolved AAC or CAC shall be rounded to two (2) significant digits, except when the criteria are used as intermediate values in a calculation, such as in the calculation of water quality-based effluent limitations (WQBELs).

[2] A value of one (1) shall be used for the water-effect ratio (WER) unless an alternate value is established under section 8.9 of this rule.

[3] One-half (½) of the FAV as calculated by procedures developed by U.S. EPA in 1980. This value would correspond to acute aquatic values calculated using IDEM procedures or U.S. EPA procedures developed in 1985 in which the calculated FAV is divided by two (2) to reduce acute toxicity.

(4) The following establishes dissolved AAC and CAC for certain metals at selected hardness values calculated from the equations and conversion factors in subdivision (3), Table 6-2 and using a value of one (1) for the WER:

Table 6-3

Metals Concentrations in Micrograms Per Liter; Hardness in Milligrams Per Liter $CaCO_3$[1]

	Arsenic (III)		Cadmium		Chromium (III)		Chromium (VI)		Copper		Lead		Nickel		Silver		Zinc	
Hardness	AAC	CAC	AAC	CAC	AAC	CAC	AAC	CAC	AAC	CAC	AAC	CAC	AAC	CAC	AAC	CAC	AAC	CAC
50	360	190	1.7	0.62	310	100	16	11	8.9	6.3	30	1.2	790	87	0.52	—	64	58
100	360	190	3.7	1.0	550	180	16	11	17	11	65	2.5	1400	160	1.7	—	110	100
150	360	190	5.7	1.4	760	250	16	11	25	16	100	3.9	2000	220	3.5	—	160	150
200	360	190	7.8	1.7	970	310	16	11	33	21	140	5.3	2500	280	5.7	—	210	190
250	360	190	10	2.0	1200	380	16	11	40	25	170	6.7	3100	340	8.3	—	250	230
300	360	190	12	2.3	1300	440	16	11	48	29	210	8.1	3600	400	11	—	290	270
350	360	190	14	2.6	1500	500	16	11	55	33	240	9.5	4100	450	15	—	330	300
400	360	190	17	2.9	1700	550	16	11	63	37	280	11	4600	510	19	—	370	340
450	360	190	19	3.1	1900	610	16	11	70	41	320	12	5100	560	23	—	410	370
500	360	190	21	3.4	2100	670	16	11	78	45	350	14	5500	610	27	—	450	410

[1] The dissolved metals criteria in this table have been rounded to two (2) significant digits in accordance with subdivision (3), Table 6-2. The equations and conversion factors in subdivision (3), Table 6-2 shall be used instead of the criteria in this table when dissolved metals criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs.

(5) The following establishes surface water quality criteria for chloride for protection of aquatic life:

(A) The following provides the AAC for chloride as a function of hardness (in mg/l as $CaCO_3$) and sulfate (in mg/l) in surface waters:

$$C = 287.8\ (\text{hardness})^{0.205797}\ (\text{sulfate})^{-0.07452}$$

Where: C = chloride AAC (maximum) in mg/l.

(B) The following provides the CAC for chloride as a function of hardness (in mg/l as $CaCO_3$) and sulfate (in mg/l) in surface waters:

$$C = 177.87\ (\text{hardness})^{0.205797}\ (\text{sulfate})^{-0.07452}$$

Where: C = chloride CAC (4-day average) in mg/l.

(C) The following applies to the AAC and CAC for chloride provided in this subdivision:

(i) Chloride criteria may only be established based on a sulfate concentration greater than the water quality criterion for sulfate, as established under subdivision (6), where the water quality criterion for sulfate has been modified on a site-specific basis in accordance with either the variance provisions under section 8.8 of this rule or the site-specific criteria provisions under section 8.9 of this rule.

(ii) The AAC and CAC for chloride calculated from the equations in this subdivision shall be rounded to the nearest whole numbers,

except when the criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs.

(D) The following establishes the AAC for chloride in mg/l at selected concentrations of hardness and sulfate, with the understanding that the equation in clause (A) shall be used instead of the criteria in this clause when chloride criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs:

	Hardness (mg/l)									
Sulfate (mg/l)	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**
15	**526**	**607**	**660**	**700**	**733**	**761**	**785**	**807**	**827**	**845**
20	**515**	**594**	**646**	**685**	**717**	**745**	**769**	**790**	**809**	**827**
25	**506**	**584**	**635**	**674**	**705**	**732**	**756**	**777**	**796**	**813**
50	**481**	**555**	**603**	**640**	**670**	**695**	**718**	**738**	**756**	**773**
100	**457**	**527**	**573**	**608**	**636**	**660**	**682**	**701**	**718**	**734**
150	**443**	**511**	**556**	**589**	**617**	**641**	**661**	**680**	**697**	**712**
200	**434**	**500**	**544**	**577**	**604**	**627**	**647**	**665**	**682**	**697**
250	**427**	**492**	**535**	**567**	**594**	**617**	**637**	**654**	**671**	**685**
300	**421**	**485**	**528**	**560**	**586**	**609**	**628**	**646**	**661**	**676**
350	**416**	**480**	**522**	**553**	**579**	**602**	**621**	**638**	**654**	**668**
400	**412**	**475**	**516**	**548**	**574**	**596**	**615**	**632**	**647**	**662**
450	**408**	**471**	**512**	**543**	**569**	**590**	**609**	**626**	**642**	**656**
500	**405**	**467**	**508**	**539**	**564**	**586**	**605**	**622**	**637**	**651**

(E) The following establishes the CAC for chloride in mg/l at selected concentrations of hardness and sulfate, with the understanding that the equation in clause (B) shall be used instead of the criteria in this clause when chloride criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs:

	Hardness (mg/l)									
Sulfate (mg/l)	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**
15	**325**	**375**	**408**	**433**	**453**	**470**	**485**	**499**	**511**	**522**
20	**318**	**367**	**399**	**423**	**443**	**460**	**475**	**488**	**500**	**511**
25	**313**	**361**	**392**	**416**	**436**	**453**	**467**	**480**	**492**	**503**
50	**297**	**343**	**373**	**395**	**414**	**430**	**444**	**456**	**467**	**477**
100	**282**	**326**	**354**	**375**	**393**	**408**	**421**	**433**	**444**	**453**
150	**274**	**316**	**343**	**364**	**381**	**396**	**409**	**420**	**430**	**440**
200	**268**	**309**	**336**	**357**	**373**	**388**	**400**	**411**	**421**	**431**
250	**264**	**304**	**331**	**351**	**367**	**381**	**394**	**404**	**414**	**423**
300	**260**	**300**	**326**	**346**	**362**	**376**	**388**	**399**	**409**	**418**
350	**257**	**297**	**322**	**342**	**358**	**372**	**384**	**394**	**404**	**413**
400	**255**	**294**	**319**	**339**	**355**	**368**	**380**	**391**	**400**	**409**
450	**252**	**291**	**316**	**336**	**351**	**365**	**377**	**387**	**397**	**405**
500	**250**	**289**	**314**	**333**	**349**	**362**	**374**	**384**	**394**	**402**

~~(5)~~ **(6)** The following establishes surface water quality criteria for sulfate that shall not be exceeded in all surface waters outside of the mixing zone:

(A) The following provides surface water quality criteria for sulfate in mg/l for the specified ranges of hardness (in mg/l as $CaCO_3$) or chloride (in mg/l), or both:

(i) If the hardness concentration of surface waters is greater than or equal to one hundred (100) mg/l but less than or equal to five hundred (500) mg/l, and if the chloride concentration of surface waters is greater than or equal to five (5) mg/l but less than twenty-five (25) mg/l, then:

$C = [-57.478 + 5.79 \text{ (hardness)} + 54.163 \text{ (chloride)}] \times 0.65$

Where: C = sulfate criterion in mg/l.

(ii) If the hardness concentration of surface waters is greater than or equal to one hundred (100) mg/l but less than or equal to five hundred (500) mg/l, and if the chloride concentration of surface waters is greater than or equal to twenty-five (25) mg/l but less than or equal to five hundred (500) mg/l, then:

$C = [1276.7 + 5.508 \text{ (hardness)} - 1.457 \text{ (chloride)}] \times 0.65$

Where: C = sulfate criterion in mg/l.

(iii) If the hardness concentration of surface waters is less than one hundred (100) mg/l and the chloride concentration of surface waters is less than or equal to five hundred (500) mg/l, the sulfate criterion is five hundred (500) mg/l.

(iv) If the hardness concentration of surface waters is greater than five hundred (500) mg/l and the chloride concentration of surface waters is greater than or equal to five (5) mg/l, but less than or equal to five hundred (500) mg/l, the sulfate criterion shall be calculated using a hardness concentration of five hundred (500) mg/l and the equation in item (i) or (ii) that applies to the chloride concentration.

(v) If the chloride concentration of surface waters is less than five (5) mg/l, the sulfate criterion is five hundred (500) mg/l.

(B) The following applies to the surface water quality criteria for sulfate provided in clause (A):

(i) Sulfate criteria may only be established based on a chloride concentration greater than the CAC ~~of two hundred thirty (230) mg/l~~ for chloride ~~as~~ established under ~~Table 6-1,~~ **subdivision (5)** where the CAC for chloride has been modified on a site-specific basis in accordance with either the variance provisions under section 8.8 of this rule or the site-specific criteria provisions under section 8.9 of this rule.

(ii) The surface water quality criteria for sulfate calculated from equations in clause (A) shall be rounded to the nearest whole numbers, except when the criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs.

(C) The following establishes surface water quality criteria for sulfate in mg/l at selected concentrations of hardness and chloride, with the understanding that the equations in clause (A) shall be used instead of the criteria in this clause when sulfate criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs:

	Hardness (mg/l)										
Chloride (mg/l)	<100	100	150	200	250	300	350	400	450	500	>500
<5	500	500	500	500	500	500	500	500	500	500	500
5	500	515	703	891	1,080	1,268	1,456	1,644	1,832	2,020	2,020
10	500	691	879	1,067	1,256	1,444	1,632	1,820	2,008	2,196	2,196

15	500	867	1,055	1,243	1,432	1,620	1,808	1,996	2,184	2,372	2,372
20	500	1,043	1,231	1,419	1,608	1,796	1,984	2,172	2,360	2,549	2,549
25	500	1,164	1,343	1,522	1,701	1,880	2,059	2,238	2,417	2,596	2,596
50	500	1,141	1,320	1,499	1,678	1,857	2,036	2,215	2,394	2,573	2,573
100	500	1,093	1,272	1,451	1,630	1,809	1,988	2,167	2,346	2,525	2,525
150	500	1,046	1,225	1,404	1,583	1,762	1,941	2,120	2,299	2,478	2,478
200	500	998	1,177	1,356	1,535	1,715	1,894	2,073	2,252	2,431	2,431
~~230~~	~~500~~	~~970~~	~~1,149~~	~~1,328~~	~~1,507~~	~~1,686~~	~~1,865~~	~~2,044~~	~~2,223~~	~~2,402~~	~~2,402~~
250	**500**	**951**	**1,130**	**1,309**	**1,488**	**1,667**	**1,846**	**2,025**	**2,204**	**2,383**	**2,383**

(b) This subsection establishes minimum surface water quality for aquatic life. In addition to subsection (a), subdivisions (1) through (5) are established to ensure conditions necessary for the maintenance of a well-balanced aquatic community. The following are applicable at any point in the waters outside of the mixing zone:

(1) There shall be no substances that:

(A) impart unpalatable flavor to food fish; or

(B) result in offensive odors in the vicinity of the water.

(2) No pH values below six (6.0) or above nine (9.0), except daily fluctuations that:

(A) exceed pH nine (9.0); and

(B) are correlated with photosynthetic activity;

shall be permitted.

(3) Concentrations of dissolved oxygen shall:

(A) average at least five (5.0) milligrams per liter per calendar day; and

(B) not be less than four (4.0) milligrams per liter at any time.

(4) The following are conditions for temperature:

(A) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.

(B) The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained.

(C) The maximum temperature rise at any time or place above natural temperatures shall not exceed:

(i) five (5) degrees Fahrenheit (two and eight-tenths (2.8) degrees Celsius) in streams; and

(ii) three (3) degrees Fahrenheit (one and seven-tenths (1.7) degrees Celsius) in lakes and reservoirs.

(D) Water temperatures shall not exceed the maximum limits in the following table during more than one percent (1%) of the hours in the twelve (12) month period ending with any month. At no time shall the water temperature at such locations exceed the maximum limits in the following table by more than three (3) degrees Fahrenheit (one and seven-tenths (1.7) degrees Celsius):

Table 6-4

	Ohio River Main Stem °F(°C)	Other Indiana Streams °F(°C)
January	50 (10.0)	50 (10.0)
February	50 (10.0)	50 (10.0)

March	60 (15.6)	60 (15.6)
April	70 (21.1)	70 (21.1)
May	80 (26.7)	80 (26.7)
June	87 (30.6)	90 (32.2)
July	89 (31.7)	90 (32.2)
August	89 (31.7)	90 (32.2)
September	87 (30.7)	90 (32.2)
October	78 (25.6)	78 (25.5)
November	70 (21.1)	70 (21.1)
December	57 (14.0)	57 (14.0)

(5) The following criteria will be used to regulate ammonia:

(A) Except for waters covered in clause (B), at all times, all surface waters outside of mixing zones shall be free of substances in concentrations that, on the basis of available scientific data, are believed to be sufficient to:

(i) injure;

(ii) be chronically toxic to; or

(iii) be carcinogenic, mutagenic, or teratogenic to;

humans, animals, aquatic life, or plants.

(B) For those waters listed in subsection (c), the following ammonia criteria will apply outside the mixing zone:

Maximum Ammonia Concentrations
(Unionized Ammonia as N)[***]
(mg/l)

	Temperature (°C)						
pH	0	5	10	15	20	25	30
6.5	0.0075	0.0106	0.0150	0.0211	0.0299	0.0299	0.0299
6.6	0.0092	0.0130	0.0183	0.0259	0.0365	0.0365	0.0365
6.7	0.0112	0.0158	0.0223	0.0315	0.0444	0.0444	0.0444
6.8	0.0135	0.0190	0.0269	0.0380	0.0536	0.0536	0.0536
6.9	0.0161	0.0228	0.0322	0.0454	0.0642	0.0642	0.0642
7.0	0.0191	0.0270	0.0381	0.0539	0.0761	0.0761	0.0761
7.1	0.0244	0.0316	0.0447	0.0631	0.0892	0.0892	0.0892
7.2	0.0260	0.0367	0.0518	0.0732	0.1034	0.1034	0.1034
7.3	0.0297	0.0420	0.0593	0.0837	0.1183	0.1183	0.1183
7.4	0.0336	0.0474	0.0669	0.0946	0.1336	0.1336	0.1336
7.5	0.0374	0.0528	0.0746	0.1054	0.1489	0.1489	0.1489
7.6	0.0411	0.0581	0.0821	0.1160	0.1638	0.1638	0.1638
7.7	0.0447	0.0631	0.0892	0.1260	0.1780	0.1780	0.1780
7.8	0.0480	0.0678	0.0958	0.1353	0.1911	0.1911	0.1911
7.9	0.0510	0.0720	0.1017	0.1437	0.2030	0.2030	0.2030
8.0	0.0536	0.0758	0.1070	0.1512	0.2135	0.2135	0.2135
8.1	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
8.2	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
8.3	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
8.4	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
8.5	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137

8.6	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
8.7	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
8.8	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
8.9	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137
9.0	0.0537	0.0758	0.1071	0.1513	0.2137	0.2137	0.2137

[***]To calculate total ammonia, divide the number in the table by the value determined by: $1/(10^{pK_a - pH} + 1)$.

Where: pK_a = 0.09018 + (2729.92/(T + 273.2))
pH = pH of water
T = °C

24-Hour Average Ammonia Concentrations
(Unionized Ammonia as N)[***]
(mg/l)
Temperature (°C)

pH	0	5	10	15	20	25	30
6.5	0.0005	0.0008	0.0011	0.0015	0.0015	0.0015	0.0015
6.6	0.0007	0.0010	0.0014	0.0019	0.0019	0.0019	0.0019
6.7	0.0009	0.0012	0.0017	0.0024	0.0024	0.0024	0.0024
6.8	0.0011	0.0015	0.0022	0.0031	0.0031	0.0031	0.0031
6.9	0.0014	0.0019	0.0027	0.0038	0.0038	0.0038	0.0038
7.0	0.0017	0.0024	0.0034	0.0048	0.0048	0.0048	0.0048
7.1	0.0022	0.0031	0.0043	0.0061	0.0061	0.0061	0.0061
7.2	0.0027	0.0038	0.0054	0.0077	0.0077	0.0077	0.0077
7.3	0.0034	0.0048	0.0068	0.0097	0.0097	0.0097	0.0097
7.4	0.0043	0.0061	0.0086	0.0122	0.0122	0.0122	0.0122
7.5	0.0054	0.0077	0.0108	0.0153	0.0153	0.0153	0.0153
7.6	0.0068	0.0097	0.0136	0.0193	0.0193	0.0193	0.0193
7.7	0.0086	0.0122	0.0172	0.0242	0.0242	0.0242	0.0242
7.8	0.0092	0.0130	0.0184	0.0260	0.0260	0.0260	0.0260
7.9	0.0098	0.0138	0.0196	0.0276	0.0276	0.0276	0.0276
8.0	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.1	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.2	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.3	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.4	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.5	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.6	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.7	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.8	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
8.9	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294
9.0	0.0103	0.0146	0.0206	0.0294	0.0294	0.0294	0.0294

[***]To calculate total ammonia, divide the number in the table by the value determined by: $1/(10^{pK_a - pH} + 1)$.

Where: pK_a = 0.09018 + (2729.92/(T + 273.2))
pH = pH of water
T = °C

(c) This subsection establishes surface water quality for cold-water fish. In addition to subsections (a) and (b), the following criteria are established to ensure conditions necessary for the maintenance of a well-balanced, cold-water fish community and are applicable at any point in the waters outside of the mixing zone:

(1) Waters:

(A) designated as salmonid waters; and

(B) that shall be protected for cold-water fish;

are those waters designated by the Indiana department of natural resources for put-and-take trout fishing.

(2) In the waters listed in subdivision (1), dissolved oxygen concentrations shall not be less than:

(A) six (6.0) milligrams per liter at any time; and

(B) seven (7.0) milligrams per liter in areas where spawning occurs during the spawning season and in areas used for imprinting during the time salmonids are being imprinted.

(3) In those waters listed in subdivision (1), the maximum temperature rise above natural shall not exceed two (2) degrees Fahrenheit (one and one-tenth (1.1) degrees Celsius) at any time or place and, unless due to natural causes, the temperature shall not exceed the following:

(A) Seventy (70) degrees Fahrenheit (twenty-one and one-tenth (21.1) degrees Celsius) at any time.

(B) Sixty-five (65) degrees Fahrenheit (eighteen and three-tenths (18.3) degrees Celsius) during spawning and imprinting periods.

(d) This subsection establishes bacteriological quality for recreational uses during the recreational season as follows:

(1) The recreational season is defined as the months of April through October, inclusive.

(2) In addition to subsection (a), the criteria in this subsection are to be used to do the following:

(A) Evaluate waters for full body contact recreational uses.

(B) Establish wastewater treatment requirements.

(C) Establish effluent limits during the recreational season.

(3) For full body contact recreational uses, E. coli bacteria shall not exceed the following:

(A) One hundred twenty-five (125) per one hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period.

(B) Two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period, except that in cases where there are at least ten (10) samples at a given site, up to ten percent (10%) of the samples may exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters where the:

(i) E. coli exceedances are incidental and attributable solely to E. coli resulting from the discharge of treated wastewater from a wastewater treatment plant as defined at IC 13-11-2-258; and

(ii) criterion in clause (A) is met.

However, a single sample shall be used for making beach notification and closure decisions.

If a geometric mean cannot be calculated because five (5) equally spaced samples are not

available, then the criterion stated in clause (B) must be met.

(4) For demonstrating compliance with wastewater treatment requirements, sanitary wastewater dischargers shall ensure the following:

(A) The concentration of E. coli in the undiluted discharge does not exceed one hundred twenty-five (125) cfu or MPN per one hundred (100) milliliters as a geometric mean of the effluent samples taken in a calendar month.

(B) Not more than ten percent (10%) of all samples when not less than ten (10) samples are taken and analyzed for E. coli in a calendar month exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters as a daily maximum. Under this clause, the calculation of ten percent (10%) of the samples taken shall be limited to the lowest whole number result.

(5) Effluent limits to implement the criteria in subdivision (3) during the recreational season shall be established in NPDES permits by incorporating the following that are to be applied to the undiluted discharge:

(A) The concentration of E. coli in the undiluted discharge shall not exceed one hundred twenty-five (125) cfu or MPN per one hundred (100) milliliters as a geometric mean of the effluent samples taken in a calendar month.

(B) Not more than ten percent (10%) of all samples in a calendar month exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters as a daily maximum. Under this clause, the calculation of ten percent (10%) of the samples taken shall be limited to the lowest whole number result.

(e) This subsection establishes surface water quality for public water supply. In addition to subsections (a) and (d), the following criteria are established to protect the surface water quality at the point at which water is withdrawn for treatment for public supply:

(1) The coliform bacteria group shall not exceed the following:

(A) Five thousand (5,000) per one hundred (100) milliliters as a monthly average value (either MPN or MF count).

(B) Five thousand (5,000) per one hundred (100) milliliters in more than twenty percent (20%) of the samples examined during any month.

(C) Twenty thousand (20,000) per one hundred (100) milliliters in more than five percent (5%) of the samples examined during any month.

(2) Taste and odor producing substances, other than naturally occurring, shall not interfere with the production of a finished water by conventional treatment consisting of the following:

(A) Coagulation.

(B) Sedimentation.

(C) Filtration.

(D) Disinfection.

(3) The concentrations of either chloride or sulfate shall not exceed two hundred fifty (250) milligrams per liter unless due to naturally occurring sources.

(4) The concentration of dissolved solids shall not exceed seven hundred fifty (750) milligrams per liter unless due to naturally occurring sources. A specific conductance of one thousand two hundred (1,200) micromhos per centimeter (at twenty-five (25) degrees Celsius) may be considered equivalent to a dissolved solids concentration of seven hundred fifty (750) milligrams per liter.

(5) Surface waters shall be considered acceptable for public water supply if radium-226 and strontium-90 are present in amounts not exceeding three (3) and ten (10) picocuries

per liter, respectively. In the known absence of strontium-90 and alpha emitters, the water supply is acceptable when the gross beta concentrations do not exceed one thousand (1,000) picocuries per liter.

(6) Chemical constituents in the waters shall not be present in such levels as to prevent, after conventional treatment, meeting the drinking water standards contained in 327 IAC 8-2, due to other than natural causes.

(f) This subsection establishes surface water quality for industrial water supply. In addition to subsection (a), the criterion to ensure protection of water quality at the point at which water is withdrawn for use (either with or without treatment) for industrial cooling and processing is that, other than from naturally occurring sources, the dissolved solids shall not exceed seven hundred fifty (750) milligrams per liter at any time. A specific conductance of one thousand two hundred (1,200) micromhos per centimeter (at twenty-five (25) degrees Celsius) may be considered equivalent to a dissolved solids concentration of seven hundred fifty (750) milligrams per liter.

(g) This subsection establishes surface water quality for agricultural uses. The criteria to ensure water quality conditions necessary for agricultural use are the same as those in subsection (a).

(h) This subsection establishes surface water quality for limited uses. The quality of waters classified for limited uses under section 3(a)(5) of this rule shall, at a minimum, meet the following criteria:

(1) The criteria contained in subsection (a).

(2) The criteria contained in subsection (d).

(3) The criteria contained in subsection (f), where applicable.

(4) The waters must be aerobic at all times.

(5) Notwithstanding subdivisions (1) through (4), the quality of a limited use stream at the point where it becomes physically or chemically capable of supporting a higher use or at its interface with a higher use water segment shall meet the criteria that are applicable to the higher use water.

(i) This subsection establishes surface water quality for exceptional uses. Waters classified for exceptional uses warrant extraordinary protection. Unless criteria are otherwise specified on a case-by-case basis, the quality of all waters designated for exceptional use shall be maintained without degradation. *(Water Pollution Control Board; 327 IAC 2-1-6; filed Sep 24, 1987, 3:00 p.m.: 11 IR 581; filed Feb 1, 1990, 4:30 p.m.: 13 IR 1020; errata, 13 IR 1861; errata filed Jul 6, 1990, 5:00 p.m.: 13 IR 2003; filed Feb 26, 1993, 5:00 p.m.: 16 IR 1725; errata filed May 7, 1993, 4:00 p.m.: 16 IR 2189; filed Jan 14, 1997, 12:00 p.m.: 20 IR 1348; errata filed Aug 11, 1997, 4:15 p.m.: 20 IR 3376; filed Feb 14, 2005, 10:05 a.m.: 28 IR 2047; errata filed Apr 6, 2006, 2:48 p.m.: 29 IR 2546; errata, 29 IR 3027; filed Mar 18, 2008, 2:26 p.m.: 20080416-IR-327060573FRA; filed May 22, 2008, 10:40 a.m.: 20080618-IR-327070185FRA)*

SECTION 2. 327 IAC 2-1-8.2 IS AMENDED TO READ AS FOLLOWS:

327 IAC 2-1-8.2 Determination of acute aquatic criteria (AAC)

Authority: IC 13-14-8; IC 13-14-9; IC 13-18-3

Affected: IC 13-18-4

Sec. 8.2. In order to ensure that the concentration of a substance or combination of substances does not become acutely toxic to aquatic organisms, an acute aquatic criterion (AAC) will be determined by one (1) of the following methods:

(1) The following for Method 1:

(A) If no AAC is available in section 6(a)(3), Table 6-1 of this rule**,** ~~or~~ section 6(a)(3), Table 6-2 of this rule, **or section 6(a)(5) of this rule,** for the substance, an AAC can be calculated using the procedures in this subdivision.

(B) An acute criterion can be calculated using modified U.S. EPA procedures when acute toxicity data are available for at least five (5) North American genera of freshwater organisms, including representatives of the following families:

(i) The family Salmonidae.

(ii) The family Cyprinidae or Centrarchidae.

(iii) Another family, not represented in item (i) or (ii), in the Class Osteichthyes.

(iv) The family Daphnidae.

(v) Another aquatic macroinvertebrate family.

(C) Resident species data are preferred for the required data set in clause (B). If one (1) or more of the required families are not a site resident, the requirement may be waived and appropriate substitution will be made. If data are not available for resident species, data for nonresident species may be substituted and will be assumed to be representative of resident species. The AAC is calculated using the following procedures:

(i) If the acute toxicity of the chemical has not been adequately shown to be related to a water quality characteristic, such as hardness, pH, or temperature, the AAC is calculated using the following procedures:

(AA) For each species for which at least one (1) acute value is available, the species mean acute value (SMAV) is calculated as the geometric mean of the results of all tests in which the concentrations of test material were stable as shown by measured values. For a species for which no such result is available, the SMAV should be calculated as the geometric mean of all available acute values, for example, results of flow-through tests in which the concentrations were not measured and results of static and renewal tests based on initial concentrations of test material.

(BB) For each genus for which one (1) or more SMAVs are available, the genus mean acute value (GMAV) is calculated as the geometric mean of the SMAVs available for the genus.

(CC) The GMAVs are ordered from high to low.

(DD) Ranks (R) are assigned to the GMAVs from "1" for the lowest to "N" for the highest. If two (2) or more GMAVs are identical, successive ranks are arbitrarily assigned.

(EE) The cumulative probability, P, is calculated for each GMAV as R/(N + 1).

(FF) The (T) GMAVs (T = 2 for N = 5; T = 3 for N = 6 or 7; T = 4 for N = 8 or greater) are selected that have cumulative probabilities closest to five-hundredths (0.05). If there are fewer than fifty-nine (59) GMAVs, these will always be the two (2) (for N = 5), three

(3) (for N = 6 or 7), or four (4) (for N = 8 or greater) lowest GMAVs.

(GG) Using the selected GMAVs and Ps, the final acute value (FAV) is calculated as:

$$S^2 = \frac{E^*((\ln GMAV)^2) - ((E(\ln GMAV))^2/T)}{E(P) - ((E(\sqrt{P}))^2/T)}$$

$$L = (E(\ln GMAV) - S(E(\sqrt{P})))/T$$

$$A = S(\sqrt{0.05}) + L$$

$$FAV = e^A$$

$$AAC = FAV/2$$

$^*E$ = Summation

(HH) If, for a commercially, recreationally, or ecologically important species, the geometric mean of the acute values from flow-through tests in which the concentrations of test material were measured is lower than the calculated FAV, then that geometric mean is used as the FAV instead of the calculated FAV.

(ii) If data are available to show that acute toxicity to two (2) or more species is similarly related to a water quality characteristic, the AAC is calculated using the procedures as follows:

(AA) For each species for which comparable acute toxicity values are available at two (2) or more different values of the water quality characteristic, a least squares regression of the acute toxicity values on the corresponding values of the water quality characteristic is performed to obtain the slope of the curve that describes the relationship. Because the best documented relationship is that between hardness and acute toxicity of metals and a log-log relationship fits these data, geometric means and natural logarithms of both toxicity and water quality are used in the rest of this procedure to illustrate the method. For relationships based on other water quality characteristics, such as pH or temperature, no transformation or a different transformation might fit the data better, and appropriate changes will be made as necessary throughout this method.

(BB) Each acute slope is evaluated as to whether or not it is meaningful, taking into account the range and number of tested values of the water quality characteristic and the degree of agreement within and between species. If meaningful slopes are not available for at least one (1) fish and one (1) invertebrate, or if the available slopes are too dissimilar, or if too few data are available to adequately define the relationship between acute toxicity and the water quality characteristic, the AAC is calculated using the procedures in item (i).

(CC) Individually, for each species, the geometric mean of the available acute values is calculated and then each of the acute values for a species is divided by the mean for the species. This normalizes the acute values so that the geometric mean of the

normalized values for each species individually and for any combination of species is one (1.0).

(DD) The values of the water quality characteristic are similarly normalized for each species individually.

(EE) All the normalized data are treated as if they were for the same species and a least squares regression of all the normalized acute values on the corresponding normalized values of the water quality characteristic is performed to obtain the pooled acute slope, V.

(FF) For each species the geometric mean, W, of the acute toxicity values and the geometric mean, X, of the water quality characteristic are calculated. (These were calculated in subitems (CC) through (DD).)

(GG) For each species the logarithmic intercept, Y, is calculated using the equation:

$$Y = \ln W - V(\ln X - \ln Z)$$

(HH) For each species calculate the SMAV at Z using the equation:

$$SMAV = e^{Y}$$

(II) Obtain the FAV at Z by using the procedures described in subitems (BB) through (HH), replacing "value" with "intercept".

(JJ) The final acute equation is written as:

$$\text{final acute value (FAV)} = e^{(V\ (\ln\ (\text{water quality characteristic}) + \ln A - V\ (\ln Z))}$$

Where: V = pooled acute slope (from subitem (EE))

A = FAV at Z (from subitem (II))

Since V, A, and Z are known, the FAV can be calculated for any selected value of the water quality characteristic.

(KK) The AAC is equal to the FAV/2.

(D) If data are not available for at least five (5) North American freshwater genera meeting the requirements in clause (B), go to subdivision (2).

(2) The following for Method 2:

(A) If the required data to derive the AAC in subdivision (1)(C) are not present in the acute toxicity data base and at least one (1) LC_{50} value is available for a daphnid species and either fathead minnow, bluegill, or rainbow trout, an FAV is calculated by dividing the lowest SMAV for the daphnid species, fathead minnow, bluegill, and rainbow trout by five (5) if rainbow trout are represented or ten (10) if rainbow trout are not represented. The AAC equals the FAV divided by two (2). If appropriate, the AAC will be made a function of a water quality characteristic in a manner similar to that described in subdivision (1)(C)(ii).

(B) If the data required in clause (A) are not available, no AAC can be calculated and the discharger will be required to develop the minimum data base (ninety-six (96) hour LC_{50} for rainbow trout, fathead minnow, or bluegill and a forty-eight (48) hour LC_{50} for a daphnid) needed to calculate the AAC.

(Water Pollution Control Board; 327 IAC 2-1-8.2; filed Feb 1, 1990, 4:30 p.m.: 13 IR 1033; errata filed Jul 6, 1990, 5:00 p.m.: 13 IR 2004; filed Jan 14, 1997, 12:00 p.m.: 20 IR 1357; errata filed Aug 11, 1997, 4:15 p.m.: 20 IR 3376; filed Feb 14, 2005, 10:05 a.m.: 28 IR 2056)

SECTION 3. 327 IAC 2-1-8.3 IS AMENDED TO READ AS FOLLOWS:

327 IAC 2-1-8.3 Determination of chronic aquatic criteria (CAC)

Authority: IC 13-14-8; IC 13-14-9; IC 13-18-3

Affected: IC 13-18-4

Sec. 8.3. In order to ensure that the concentration of a substance or combination of substances does not produce chronic effects on aquatic organisms, a chronic aquatic criterion (CAC) will be determined by one (1) of the following methods:

(1) The following for Method 1:

(A) If no CAC is given for the substance in section 6(a)(3), Table 6-1 of this rule, ~~or~~ section 6(a)(3), Table 6-2 of this rule, **or section 6(a)(5) of this rule,** a CAC can be calculated using the procedures in this subdivision.

(B) The CAC is derived in the same manner as the FAV in section 8.2(1) of this rule by substituting CAC for FAV, chronic for acute, MATC (maximum acceptable toxicant concentration) for LC_{50}, SMCV (species mean chronic value) for SMAV, and GMCV (genus mean chronic value) for GMAV.

(C) If chronic toxicity data are not available for at least five (5) North American freshwater genera meeting the requirements in section 8.2(1)(B) of this rule, go to subdivision (2).

(2) The following for Method 2:

(A) The CAC can be calculated by dividing the FAV by an acute-chronic ratio (or geometric mean of the acute-chronic ratios if more than one (1) is available) for at least one (1) North American freshwater species.

(B) If no acute-chronic ratio is available for at least one (1) North American freshwater species, go to subdivision (3).

(3) The following for Method 3:

(A) The CAC can be calculated by dividing the FAV by a factor of forty-five (45). If, for a commercially, recreationally, or ecologically important species, the geometric mean of the chronic values is lower than the calculated CAC, then that geometric mean is used as the CAC instead of the calculated CAC.

(B) If the data needed in clause (A) are not available, no CAC can be calculated and the discharger will be required to develop the minimum data base necessary to calculate the CAC (ninety-six (96) hour LC_{50} for rainbow trout, fathead minnow, or bluegill and a forty-eight (48) hour LC_{50} for a daphnid).

(Water Pollution Control Board; 327 IAC 2-1-8.3; filed Feb 1, 1990, 4:30 p.m.: 13 IR 1035; errata, 13 IR 1861; errata filed Jul 6, 1990, 5:00 p.m.: 13 IR 2004; errata filed Jul 24, 1990, 4:55 p.m.: 13 IR 2138; filed Jan 14, 1997, 12:00 p.m.: 20 IR 1359; filed Feb 14, 2005, 10:05 a.m.: 28 IR 2057)

SECTION 4. 327 IAC 2-1.5-8 IS AMENDED TO READ AS FOLLOWS:

327 IAC 2-1.5-8 Minimum surface water quality criteria

Authority: IC 13-14-8; IC 13-14-9; IC 13-18-3

Affected: IC 13-11-2-258; IC 13-18-4; IC 13-30-2-1; IC 14-22-9

Sec. 8. (a) All surface water quality criteria in this section, except those provided in subsection (b)(1), will cease to be applicable when the stream flows are less than the applicable

stream design flow for the particular criterion as determined under 327 IAC 5-2-11.4.

(b) The following are minimum surface water quality conditions:
(1) All surface waters within the Great Lakes system at all times and at all places, including waters within the mixing zone, shall meet the minimum conditions of being free from substances, materials, floating debris, oil, or scum attributable to municipal, industrial, agricultural, and other land use practices, or other discharges that do any of the following:

(A) Will settle to form putrescent or otherwise objectionable deposits.
(B) Are in amounts sufficient to be unsightly or deleterious.
(C) Produce:

(i) color;
(ii) visible oil sheen;
(iii) odor; or
(iv) other conditions;

in such degree as to create a nuisance.
(D) Are in concentrations or combinations that will cause or contribute to the growth of aquatic plants or algae to such degree as to:

(i) create a nuisance;
(ii) be unsightly; or
(iii) otherwise impair the designated uses.

(E) Are in amounts sufficient to be acutely toxic to, or to otherwise severely injure or kill, aquatic life, other animals, plants, or humans. To assure protection of aquatic life, the waters shall meet the following requirements:

(i) Concentrations of toxic substances shall not exceed the CMC or SMC outside the zone of initial dilution or the final acute value (FAV = 2 (CMC) or 2 (SMC)) in the undiluted discharge unless, for a discharge to a receiving stream or Lake Michigan, an alternate mixing zone demonstration is conducted and approved in accordance with 327 IAC 5-2-11.4(b)(4), in which case, the CMC or SMC shall be met outside the applicable alternate mixing zone:

(AA) for certain substances, a CMC is established and set forth in subdivision (3), Table 8-1 (which table incorporates subdivision (4), Table 8-2)**, and subdivision (5);**
(BB) for substances for which a CMC is not specified in subdivision (3), Table 8-1, **or subdivision (5),** a CMC shall be calculated by the commissioner using the procedures in section 11 of this rule, or, if the minimum data requirements to calculate a CMC are not met, an SMC shall be calculated using the procedures in section 12 of this rule; and
(CC) the CMC or SMC determined under subitem (AA) or (BB) may be modified on a site-specific basis to reflect local conditions in accordance with section 16 of this rule.

(ii) A discharge shall not cause acute toxicity, as measured by whole effluent toxicity tests, at any point in the waterbody. Compliance with this criterion shall be demonstrated if a discharge does not exceed one and zero-tenths (1.0) TU_a in the undiluted discharge. For a discharge into a receiving stream or Lake Michigan, for which an alternate mixing zone

demonstration is conducted and approved in accordance with 327 IAC 5-2-11.4(b)(4), compliance with this criterion shall be demonstrated if three-tenths (0.3) TU_a is not exceeded outside the applicable alternate mixing zone.

This clause shall not apply to the chemical control of plants and animals when that control is performed in compliance with approval conditions specified by the Indiana department of natural resources as provided by IC 14-22-9.

(2) At all times, all surface waters outside of the applicable mixing zones determined in accordance with section 7 of this rule shall be free of substances in concentrations that, on the basis of available scientific data, are believed to be sufficient to injure, be chronically toxic to, or be carcinogenic, mutagenic, or teratogenic to humans, animals, aquatic life, or plants. To assure protection against the adverse effects identified in this subdivision, a toxic substance or pollutant shall not be present in such waters in concentrations that exceed the most stringent of the following:

(A) A CCC or an SCC to protect aquatic life from chronic toxic effects as follows:

(i) For certain substances, a CCC is established and set forth in subdivision (3), Table 8-1 (which table incorporates subdivision (4), Table 8-2)**, and subdivision (5).**

(ii) For substances for which a CCC is not specified in subdivision (3), Table 8-1, **or subdivision (5),** a CCC shall be calculated by the commissioner using the procedures in section 11 of this rule, or, if the minimum data requirements to calculate a CCC are not met, an SCC shall be calculated using the procedures in section 12 of this rule.

(iii) The CCC or SCC determined under item (i) or (ii) may be modified on a site-specific basis to reflect local conditions in accordance with section 16 of this rule.

(iv) To assure protection of aquatic life, a discharge shall not cause chronic toxicity, as measured by whole effluent toxicity tests, outside of the applicable mixing zone. Compliance with this criterion shall be demonstrated if the waterbody does not exceed one and zero-tenths (1.0) TU_c at the edge of the mixing zone.

(B) An HNC or HNV to protect human health from adverse noncancer effects that may result from the consumption of aquatic organisms or drinking water from the waterbody determined as follows:

(i) For certain substances, an HNC is established and set forth in subdivision ~~(5),~~ **(6),** Table 8-3.

(ii) For substances for which an HNC is not specified in subdivision ~~(5),~~ **(6),** Table 8-3, an HNC shall be calculated by the commissioner using the procedures in section 14 of this rule, or, if the minimum data requirements to calculate an HNC are not met, an HNV shall be calculated using the procedures in section 14 of this rule.

(iii) The HNC or HNV determined under item (i) or (ii) may be modified on a site-specific basis to reflect local conditions in accordance with section 16 of this rule.

(iv) The HNC-nondrinking or HNV-nondrinking for a substance shall apply to all surface waters outside the applicable mixing zone for a discharge of that substance. The HNC-drinking or HNV-drinking shall

apply at the point of the public water system intake.

(C) For carcinogenic substances, an HCC or HCV to protect human health from unacceptable cancer risk of greater than one (1) additional occurrence of cancer per one hundred thousand (100,000) population as follows:

(i) For certain substances, an HCC is established and set forth in subdivision ~~(5),~~ **(6),** Table 8-3.

(ii) For substances for which an HCC is not specified in subdivision ~~(5),~~ **(6),** Table 8-3, an HCC shall be calculated by the commissioner using the procedures in section 14 of this rule or, if the minimum data requirements to calculate an HCC are not met, an HCV shall be calculated using the procedures in section 14 of this rule.

(iii) The HCC or HCV determined under item (i) or (ii) may be modified on a site-specific basis to reflect local conditions in accordance with section 16 of this rule.

(iv) The HCC-nondrinking or HCV-nondrinking for a substance shall apply to all surface waters outside the applicable mixing zone for a discharge of that substance. The HCC-drinking or HCV-drinking shall apply at the point of the public water system intake.

(D) A WC to protect avian and mammalian wildlife populations from adverse effects that may result from the consumption of aquatic organisms or water from the waterbody as follows:

(i) For certain substances, a WC is established and set forth in subdivision ~~(6),~~ **(7),** Table 8-4.

(ii) For substances for which a WC is not specified in subdivision ~~(6),~~ **(7),** Table 8-4, a WC shall be calculated by the commissioner using the procedures in section 15 of this rule or, if the minimum data requirements to calculate a WC are not met, a WV may be calculated using the procedures in section 15 of this rule.

(iii) The WC or WV determined under item (i) or (ii) may be modified on a site-specific basis to reflect local conditions in accordance with section 16 of this rule.

(3) The following establishes surface water quality criteria for protection of aquatic life:

Table 8-1

Surface Water Quality Criteria for Protection of Aquatic Life[1]

CAS Number	Substances	CMC (Maximum) (µg/l)	CMC Conversion Factors	CCC (4-Day Average) (µg/l)	CCC Conversion Factors
	Metals (dissolved)[2]				
7440382	Arsenic (III)	WER[3](339.8)	1.000	WER[3](147.9)	1.000
7440439	Cadmium	WER[3]($e^{(1.128 [\ln(hardness)]-3.6867)}$)	1.136672-[(ln hardness)(0.041838)]	WER[3]($e^{(0.7852 [\ln(hardness)]-2.715)}$)	1.101672-[(ln hardness)(0.041838)]
7440473	Chromium (III)	WER[3]($e^{(0.819 [\ln(hardness)]+3.7256)}$)	0.316	WER[3]($e^{(0.819 [\ln(hardness)]+0.6848)}$)	0.860
7440473	Chromium (VI)	WER[3](16.02)	0.982	WER[3](10.98)	0.962

7440508	Copper	$WER^{[3]}(e^{(0.9422[\ln(\text{hardness})]-1.700)})$	0.960	$WER^{[3]}(e^{(0.8545[\ln(\text{hardness})]-1.702)})$	0.960
7439976	Mercury	$WER^{[3]}(1.694)$	0.85	$WER^{[3]}(0.9081)$	0.85
7440020	Nickel	$WER^{[3]}(e^{(0.846[\ln(\text{hardness})]+2.255)})$	0.998	$WER^{[3]}(e^{(0.846[\ln(\text{hardness})]+0.0584)})$	0.997
7782492	Selenium			5	0.922
7440666	Zinc	$WER^{[3]}(e^{(0.8473[\ln(\text{hardness})]+0.884)})$	0.978	$WER^{[3]}(e^{(0.8473[\ln(\text{hardness})]+0.884)})$	0.986
	Organics (total)				
60571	Dieldrin	0.24	NA	0.056	NA
72208	Endrin	0.086	NA	0.036	NA
56382	Parathion	0.065	NA	0.013	NA
87865	Pentachlorophenol [4]	$e^{(1.005[pH]-4.869)}$	NA	$e^{(1.005[pH]-5.134)}$	NA
	Other Substances				
	~~Chlorides (total)~~ **Chloride**	~~860000~~ **[6]**	NA	~~230000~~ **[6]**	NA
	Chlorine (total residual)	19	NA	11	NA
	Chlorine (intermittent, total residual) [5]	200	NA		NA
57125	Cyanide (free)	22	NA	5.2	NA

[1] Aquatic organisms should not be affected unacceptably if the four (4) day average concentration of any substance in this table does not exceed the CCC more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed the CMC more than once every three (3) years on the average, except possibly where a commercially or recreationally important species is very sensitive.

[2] The CMC and CCC columns of this table contain total recoverable metals criteria (numeric and hardness-based). The criterion for the dissolved metal is calculated by multiplying the appropriate conversion factor by the CMC or CCC. This dissolved CMC or CCC shall be rounded to two (2) significant digits, except when the criteria are used as intermediate values in a calculation, such as in the calculation of water quality-based effluent limitations (WQBELs).

[3] A value of one (1) shall be used for the WER unless an alternate value is established under section 16 of this rule.

[4] A CMC and CCC calculated for pentachlorophenol using the equation in this table shall be rounded to two (2) significant digits, except when the criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs.

[5] To be considered an intermittent discharge, total residual chlorine shall not be detected in the discharge for a period of more than forty (40) minutes in duration, and such periods shall be separated by at least five (5) hours.

[6] The CMC and CCC for this substance are established in subdivision (5).

(4) The following establishes dissolved CMCs and CCCs for certain metals at selected hardness values calculated from the equations and conversion factors in subdivision (3),

Table 8-1 and using a value of one (1) for the WER, where applicable:

Table 8-2

Metals Concentrations in Micrograms Per Liter; Hardness in Milligrams Per Liter $CaCO_3$[1]

	Arsenic (III)		Cadmium		Chromium (III)		Chromium (VI)		Copper		Mercury		Nickel		Selenium		Zinc	
Hardness	CMC	CCC	CMC	CCC	CMC	CCC	CMC	CCC	CMC	CCC	CMC	CCC	CMC	CCC	CMC	CCC	CMC	CCC
50	340	150	2.0	1.3	320	42	16	11	7.0	5.0	1.4	0.77	260	29	—	4.6	65	66
100	340	150	4.3	2.2	570	74	16	11	13	9.0	1.4	0.77	470	52	—	4.6	120	120
150	340	150	6.6	3.0	790	100	16	11	20	13	1.4	0.77	660	73	—	4.6	170	170
200	340	150	9.0	3.7	1,000	130	16	11	26	16	1.4	0.77	840	93	—	4.6	210	210
250	340	150	12	4.4	1,200	160	16	11	32	20	1.4	0.77	1,000	110	—	4.6	250	260
300	340	150	14	5.0	1,400	180	16	11	38	23	1.4	0.77	1,200	130	—	4.6	300	300
350	340	150	17	5.6	1,600	210	16	11	44	26	1.4	0.77	1,400	150	—	4.6	340	340
400	340	150	19	6.2	1,800	230	16	11	50	29	1.4	0.77	1,500	170	—	4.6	380	380
450	340	150	22	6.8	2,000	250	16	11	55	32	1.4	0.77	1,700	190	—	4.6	420	420
500	340	150	24	7.3	2,100	280	16	11	61	35	1.4	0.77	1,800	200	—	4.6	460	460

[1] The dissolved metals criteria in this table have been rounded to two (2) significant digits in accordance with subdivision (3), Table 8-1. The equations and conversion factors in subdivision (3), Table 8-1 shall be used instead of the criteria in this table when dissolved metals criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs.

(5) The following establishes surface water quality criteria for chloride for protection of aquatic life:

(A) The following provides the CMC for chloride as a function of hardness (in mg/l as $CaCO_3$) and sulfate (in mg/l) in surface waters:

$$C = 287.8\ (\text{hardness})^{0.205797}\ (\text{sulfate})^{-0.07452}$$

Where: C = chloride CMC (maximum) in mg/l.

(B) The following provides the CCC for chloride as a function of hardness (in mg/l as $CaCO_3$) and sulfate (in mg/l) in surface waters:

$$C = 177.87\ (\text{hardness})^{0.205797}\ (\text{sulfate})^{-0.07452}$$

Where: C = chloride CCC (4-Day Average) in mg/l.

(C) The CMC and CCC for chloride calculated from the equations in this subdivision shall be rounded to the nearest whole numbers, except when the criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs.

(D) The following establishes the CMC for chloride in mg/l at selected concentrations of hardness and sulfate, with the understanding that the equation in clause (A) shall be used instead of the criteria in this clause when chloride criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs:

Table 8-2a

Sulfate (mg/l)	Hardness (mg/l) 50	100	150	200	250	300	350	400	450	500
15	**526**	**607**	**660**	**700**	**733**	**761**	**785**	**807**	**827**	**845**
20	**515**	**594**	**646**	**685**	**717**	**745**	**769**	**790**	**809**	**827**
25	**506**	**584**	**635**	**674**	**705**	**732**	**756**	**777**	**796**	**813**
50	**481**	**555**	**603**	**640**	**670**	**695**	**718**	**738**	**756**	**773**
100	**457**	**527**	**573**	**608**	**636**	**660**	**682**	**701**	**718**	**734**
150	**443**	**511**	**556**	**589**	**617**	**641**	**661**	**680**	**697**	**712**
200	**434**	**500**	**544**	**577**	**604**	**627**	**647**	**665**	**682**	**697**
250	**427**	**492**	**535**	**567**	**594**	**617**	**637**	**654**	**671**	**685**
300	**421**	**485**	**528**	**560**	**586**	**609**	**628**	**646**	**661**	**676**
350	**416**	**480**	**522**	**553**	**579**	**602**	**621**	**638**	**654**	**668**
400	**412**	**475**	**516**	**548**	**574**	**596**	**615**	**632**	**647**	**662**
450	**408**	**471**	**512**	**543**	**569**	**590**	**609**	**626**	**642**	**656**
500	**405**	**467**	**508**	**539**	**564**	**586**	**605**	**622**	**637**	**651**

(E) The following establishes the CCC for chloride in mg/l at selected concentrations of hardness and sulfate, with the understanding that the equation in clause (B) shall be used instead of the criteria in this clause when chloride criteria are used as intermediate values in a calculation, such as in the calculation of WQBELs:

Table 8-2b

Sulfate (mg/l)	Hardness (mg/l) 50	100	150	200	250	300	350	400	450	500
15	**325**	**375**	**408**	**433**	**453**	**470**	**485**	**499**	**511**	**522**
20	**318**	**367**	**399**	**423**	**443**	**460**	**475**	**488**	**500**	**511**
25	**313**	**361**	**392**	**416**	**436**	**453**	**467**	**480**	**492**	**503**
50	**297**	**343**	**373**	**395**	**414**	**430**	**444**	**456**	**467**	**477**
100	**282**	**326**	**354**	**375**	**393**	**408**	**421**	**433**	**444**	**453**
150	**274**	**316**	**343**	**364**	**381**	**396**	**409**	**420**	**430**	**440**
200	**268**	**309**	**336**	**357**	**373**	**388**	**400**	**411**	**421**	**431**
250	**264**	**304**	**331**	**351**	**367**	**381**	**394**	**404**	**414**	**423**
300	**260**	**300**	**326**	**346**	**362**	**376**	**388**	**399**	**409**	**418**
350	**257**	**297**	**322**	**342**	**358**	**372**	**384**	**394**	**404**	**413**
400	**255**	**294**	**319**	**339**	**355**	**368**	**380**	**391**	**400**	**409**
450	**252**	**291**	**316**	**336**	**351**	**365**	**377**	**387**	**397**	**405**
500	**250**	**289**	**314**	**333**	**349**	**362**	**374**	**384**	**394**	**402**

~~(5)~~ **(6)** The following establishes surface water quality criteria for protection of human health:

Table 8-3
Surface Water Quality Criteria for Protection of Human Health[1]

CAS Number	Substances	Human Noncancer Criteria (HNC) Drinking (µg/l)	Nondrinking (µg/l)	Human Cancer Criteria (HCC) Drinking (µg/l)	Nondrinking (µg/l)
	Metals (total recoverable)				

7439976	Mercury (including methylmercury)	0.0018	0.0018		
	Organics (total)				
71432	Benzene	19	510	12	310
57749	Chlordane	0.0014	0.0014	0.00025	0.00025
108907	Chlorobenzene	470	3,200		
50293	DDT	0.002	0.002	0.00015	0.00015
60571	Dieldrin	0.00041	0.00041	6.5×10^{-6}	6.5×10^{-6}
105679	2,4-dimethylphenol	450	8,700		
51285	2,4-dinitrophenol	55	2,800		
118741	Hexachlorobenzene	0.046	0.046	0.00045	0.00045
67721	Hexachloroethane	6	7.6	5.3	6.7
58899	Lindane	0.47	0.5		
75092	Methylene chloride	1,600	90,000	47	2600
1336363	PCBs (class)			6.8×10^{-6}	6.8×10^{-6}
1746016	2,3,7,8-TCDD (dioxin)	6.7×10^{-8}	6.7×10^{-8}	8.6×10^{-9}	8.6×10^{-9}
108883	Toluene	5,600	51,000		
8001352	Toxaphene			6.8×10^{-5}	6.8×10^{-5}
79016	Trichloroethylene			29	370
	Other Substances				
57125	Cyanide (total)	600	48,000		

[1]The HNC and HCC are thirty (30) day average criteria.

~~(6)~~ **(7)** The following establishes surface water quality criteria for protection of wildlife:

Table 8-4

Surface Water Quality Criteria for Protection of Wildlife[1]

CAS Number	Substances	Wildlife Criteria (µg/l)
	Metals (total recoverable)	
7439976	Mercury (including methylmercury)	0.0013
	Organics (total)	
50293	DDT and metabolites	1.1×10^{-5}
1336363	PCBs (class)	1.2×10^{-4}
1746016	2, 3, 7, 8-TCDD (dioxin)	3.1×10^{-9}

[1]The WC are thirty (30) day average criteria.

(c) This subsection establishes minimum surface water quality criteria for aquatic life. In addition to the criteria in subsection (b), this subsection ensures conditions necessary for the maintenance of a well-balanced aquatic community. The following conditions are applicable at any point in the waters outside of the applicable mixing zone, as determined in accordance with section 7 of this rule:

(1) There shall be no substances that:

(A) impart unpalatable flavor to food fish; or

(B) result in offensive odors in the vicinity of the water.

(2) No pH values below six (6.0) or above nine (9.0), except daily fluctuations that:

(A) exceed pH nine (9.0); and

(B) are correlated with photosynthetic activity;

shall be permitted.

(3) Concentrations of dissolved oxygen shall:

(A) average at least five (5.0) milligrams per liter per calendar day; and
(B) not be less than four (4.0) milligrams per liter at any time.

(4) The following are conditions for temperature:

(A) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.

(B) The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained.

(C) Water temperatures shall not exceed the maximum limits in the following table during more than one percent (1%) of the hours in the twelve (12) month period ending with any month. At no time shall the water temperature at such locations exceed the maximum limits in the following table by more than three (3) degrees Fahrenheit (one and seven-tenths (1.7) degrees Celsius):

Table 8-5
Maximum Instream Water Temperatures

Month	St. Joseph River Tributary to Lake Michigan Upstream of the Twin Branch Dam °F(°C)	All Other Indiana Streams in the Great Lakes System °F(°C)
January	50 (10)	50 (10)
February	50 (10)	50 (10)
March	55 (12.8)	60 (15.6)
April	65 (18.3)	70 (21.1)
May	75 (23.9)	80 (26.7)
June	85 (29.4)	90 (32.2)
July	85 (29.4)	90 (32.2)
August	85 (29.4)	90 (32.2)
September	84 (29.4)	90 (32.2)
October	70 (21.1)	78 (25.5)
November	60 (15.6)	70 (21.1)
December	50 (10)	57 (14.0)

(D) The following temperature criteria shall apply to Lake Michigan:

(i) In all receiving waters, the points of measurement normally shall be in the first meter below the surface at such depths necessary to avoid thin layer surface warming due to extreme ambient air temperatures, but, where required to determine the true distribution of heated wastes and natural variations in water temperatures, measurements shall be at a greater depth and at several depths as a thermal profile.

(ii) There shall be no abnormal temperature changes so as to be injurious to fish, wildlife, or other aquatic life, or the growth or propagation thereof. In addition, plume interaction with the bottom shall:

(AA) be minimized; and

(BB) not injuriously affect fish, shellfish, and wildlife spawning or nursery areas.

(iii) The normal daily and seasonal temperature fluctuations that existed before the addition of heat shall be maintained.

(iv) At any time and at a maximum distance of a one thousand (1,000) foot arc inscribed from a fixed point adjacent to the discharge or as agreed upon by the commissioner and federal regulatory agencies, the following shall apply:

(AA) The receiving water temperature shall not be more than three

(3) degrees Fahrenheit (one and seven-tenths (1.7) degrees Celsius) above the existing natural water temperature.

(BB) Thermal discharges to Lake Michigan shall comply with the following maximum temperature requirements:

(aa) Thermal discharges to Lake Michigan shall not raise the maximum temperature in the receiving water above those listed in the following table, except to the extent the permittee adequately demonstrates that the exceedance is caused by the water temperature of the intake water:

Table 8-6

Maximum Water Temperatures

Month	°F(°C)
January	45 (7)
February	45 (7)
March	45 (7)
April	55 (13)
May	60 (16)
June	70 (21)
July	80 (27)
August	80 (27)
September	80 (27)
October	65 (18)
November	60 (16)
December	50 (10)

(bb) If the permittee demonstrates that the intake water temperature is within three (3) degrees Fahrenheit below an applicable maximum temperature under subitem (aa), Table 8-6, then not more than a three (3) degree Fahrenheit exceedance of the maximum water temperature shall be permitted.

(v) The facilities described as follows that discharge into the open waters of Lake Michigan shall be limited to the amount essential for blowdown in the operation of a closed cycle cooling facility:

(AA) All facilities that have new waste heat discharges exceeding a daily average of five-tenths (0.5) billion British thermal units per hour. As used in this item, "new waste heat discharge" means a discharge that had not begun operations as of February 11, 1972.

(BB) All facilities with existing waste heat discharges that increase the quantity of waste heat discharged by more than a daily average of five-tenths (0.5) billion British thermal units per hour.

(vi) Water intakes shall be designed and located to minimize entrainment and damage to desirable organisms. Requirements may vary depending upon local conditions, but, in general, intakes shall:

(AA) have minimum water velocity; and

(BB) not be located in spawning or nursery areas of important fishes.

Water velocity at screens and other exclusion devices shall also be at a minimum.

(vii) Discharges other than those now in existence shall be such that the thermal plumes do not overlap or intersect.

(viii) Facilities discharging more than a daily average of five-tenths (0.5) billion British thermal units of waste heat shall:

(AA) continuously record intake and discharge temperature and flow; and

(BB) make those records available to the public or regulatory agencies upon request.

(5) The following criteria shall be used to regulate ammonia:

(A) Concentrations of total ammonia (as N) shall not exceed the CMC outside the zone of initial dilution or the final acute value (FAV = 2 (CMC)) in the undiluted discharge unless, for a discharge to a receiving stream or Lake Michigan, an alternate mixing zone demonstration is conducted and approved in accordance with 327 IAC 5-2-11.4(b)(4), in which case, the CMC shall be met outside the applicable alternate mixing zone. The CMC of total ammonia (as N) is determined using the following equation:

$$CMC = \frac{(0.822)(0.52)(10^{(pk_a - pH)} + 1)}{(FT)(FPH)(2)}$$

Where: FT = $10^{0.03(20-T)}$

FPH = 1; when: $8 \leq pH \leq 9$; or

$\frac{1+10^{(7.4-pH)}}{1.25}$; when: $6.5 \leq pH \leq 8$

pK_a = $0.09018 + \frac{2729}{T+273.2}$

T = Temperature in °C

(B) The CCC of total ammonia (as N) is determined using the following equation:

$$CCC = \frac{(0.822)(0.80)(10^{(pK_a - pH)} + 1)}{(FT)(FPH)(RATIO)}$$

Where: FT = $10^{0.03(20-T)}$

FPH = 1; when: $8 \leq pH \leq 9$; or

$\frac{1+10^{(7.4-pH)}}{1.25}$; when: $6.5 \leq pH \leq 8$

RATIO = 13.5; when: $7.7 \leq pH \leq 9$; or

$\frac{(20)(10^{(7.7-pH)})}{1+10^{(7.4-pH)}}$; when: $6.5 \leq pH \leq 7.7$

pK_a = $0.09018 + \frac{2729}{T+273.2}$

T = Temperature in °C

(C) The use of the equations in clause (A) results in the following CMCs for total ammonia (as N) at different temperatures and pHs:

Table 8-7
Criterion Maximum Concentrations for
Total Ammonia (as N)
Temperature (°C)

pH	0	5	10	15	20	25	30
6.5	28.48	26.61	25.23	24.26	23.64	23.32	23.29
6.6	27.68	25.87	24.53	23.59	22.98	22.68	22.65
6.7	26.74	24.99	23.69	22.78	22.20	21.92	21.90
6.8	25.64	23.96	22.72	21.85	21.30	21.03	21.01
6.9	24.37	22.78	21.60	20.78	20.26	20.01	20.00
7.0	22.95	21.45	20.35	19.58	19.09	18.86	18.86
7.1	21.38	19.98	18.96	18.24	17.80	17.59	17.60
7.2	19.68	18.40	17.46	16.81	16.40	16.22	16.24
7.3	17.90	16.73	15.88	15.29	14.93	14.78	14.81
7.4	16.06	15.02	14.26	13.74	13.42	13.30	13.35
7.5	14.23	13.31	12.64	12.19	11.92	11.81	11.88
7.6	12.44	11.65	11.07	10.67	10.45	10.37	10.45
7.7	10.75	10.06	9.569	9.238	9.052	9.003	9.088
7.8	9.177	8.597	8.181	7.907	7.760	7.734	7.830
7.9	7.753	7.268	6.924	6.701	6.589	6.584	6.689
8.0	6.496	6.095	5.813	5.636	5.555	5.569	5.683
8.1	5.171	4.857	4.639	4.508	4.457	4.486	4.602
8.2	4.119	3.873	3.707	3.612	3.584	3.625	3.743
8.3	3.283	3.092	2.967	2.900	2.891	2.942	3.061
8.4	2.618	2.472	2.379	2.335	2.340	2.399	2.519
8.5	2.091	1.979	1.911	1.886	1.903	1.968	2.089
8.6	1.672	1.588	1.540	1.529	1.555	1.625	1.747
8.7	1.339	1.277	1.246	1.246	1.279	1.353	1.475
8.8	1.075	1.030	1.011	1.021	1.060	1.137	1.260
8.9	0.8647	0.8336	0.8254	0.8418	0.8862	0.9650	1.088
9.0	0.6979	0.6777	0.6777	0.6998	0.7479	0.8286	0.9521

(D) The use of the equations in clause (B) results in the following CCCs for total ammonia (as N) at different temperatures and pHs:

Table 8-8
Criterion Continuous Concentrations for
Total Ammonia (as N)
Temperature (°C)

pH	0	5	10	15	20	25	30
6.5	2.473	2.310	2.191	2.106	2.052	2.025	2.022
6.6	2.473	2.311	2.191	2.107	2.053	2.026	2.023
6.7	2.473	2.311	2.191	2.107	2.054	2.027	2.025
6.8	2.473	2.311	2.192	2.108	2.055	2.028	2.027

6.9	2.474	2.312	2.193	2.109	2.056	2.030	2.030
7.0	2.474	2.312	2.193	2.110	2.058	2.033	2.033
7.1	2.475	2.313	2.195	2.112	2.060	2.036	2.037
7.2	2.475	2.314	2.196	2.114	2.063	2.040	2.043
7.3	2.476	2.315	2.198	2.116	2.066	2.044	2.050
7.4	2.477	2.317	2.200	2.119	2.070	2.050	2.058
7.5	2.478	2.319	2.202	2.123	2.075	2.058	2.069
7.6	2.480	2.321	2.206	2.128	2.082	2.067	2.082
7.7	2.450	2.294	2.181	2.106	2.063	2.052	2.071
7.8	2.092	1.959	1.865	1.802	1.769	1.763	1.785
7.9	1.767	1.657	1.578	1.527	1.502	1.501	1.525
8.0	1.481	1.389	1.325	1.285	1.266	1.269	1.295
8.1	1.179	1.107	1.057	1.027	1.016	1.022	1.049
8.2	0.9387	0.8828	0.8450	0.8232	0.8169	0.8263	0.8531
8.3	0.7481	0.7048	0.6762	0.6610	0.6589	0.6705	0.6976
8.4	0.5968	0.5634	0.5421	0.5321	0.5334	0.5468	0.5741
8.5	0.4766	0.4511	0.4357	0.4298	0.4337	0.4485	0.4760
8.6	0.3811	0.3619	0.3511	0.3485	0.3545	0.3704	0.3981
8.7	0.3052	0.2910	0.2839	0.2839	0.2916	0.3083	0.3362
8.8	0.2450	0.2347	0.2305	0.2326	0.2417	0.2591	0.2871
8.9	0.1971	0.1900	0.1881	0.1919	0.2020	0.2199	0.2480
9.0	0.1591	0.1545	0.1545	0.1595	0.1705	0.1889	0.2170

(d) This subsection establishes surface water quality for cold-water fish. The waters listed in section 5(a)(3) of this rule are designated as salmonid waters and shall be protected for cold-water fish. In addition to subsections (b) and (c), the following criteria are established to ensure conditions necessary for the maintenance of a well-balanced, cold-water fish community and are applicable at any point in the waters outside of the applicable mixing zone:

(1) Dissolved oxygen concentrations shall not be less than:

(A) six (6.0) milligrams per liter at any time; and

(B) seven (7.0) milligrams per liter in areas where spawning occurs during the spawning season and in areas used for imprinting during the time salmonids are being imprinted.

Dissolved oxygen concentrations in the open waters of Lake Michigan shall not be less than seven (7.0) milligrams per liter at any time.

(2) The maximum temperature rise above natural shall not exceed two (2) degrees Fahrenheit (one and one-tenth (1.1) degrees Celsius) at any time or place and, unless due to natural causes, the temperature shall not exceed the following:

(A) Seventy (70) degrees Fahrenheit (twenty-one and one-tenth (21.1) degrees Celsius) at any time.

(B) Sixty-five (65) degrees Fahrenheit (eighteen and three-tenths (18.3) degrees Celsius) during spawning or imprinting periods.

(e) This subsection establishes bacteriological quality for recreational uses during the recreational season as follows:

(1) The recreational season is defined as the months of April through October, inclusive.

(2) In addition to subsection (b), the criteria in this subsection shall be used to do the following:

(A) Evaluate waters for full body contact recreational uses.

(B) Establish wastewater treatment requirements.

(C) Establish effluent limits during the recreational season.

(3) For full body contact recreational uses, E. coli bacteria shall not exceed the following:

(A) One hundred twenty-five (125) per one hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period.

(B) Two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period, except that in cases where there are at least ten (10) samples at a given site, up to ten percent (10%) of the samples may exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters where:

(i) the E. coli exceedances are incidental and attributable solely to E. coli resulting from the discharge of treated wastewater from a wastewater treatment plant as defined at IC 13-11-2-258; and

(ii) the criterion in clause (A) is met.

However, a single sample shall be used for making beach notification and closure decisions.

If a geometric mean cannot be calculated because five (5) equally spaced samples are not available, then the criterion stated in clause (B) must be met.

(4) For demonstrating compliance with wastewater treatment requirements, sanitary wastewater dischargers shall ensure the following:

(A) The concentration of E. coli in the undiluted discharge does not exceed one hundred twenty-five (125) cfu or MPN per one hundred (100) milliliters as a geometric mean of the effluent samples taken in a calendar month.

(B) Not more than ten percent (10%) of all samples when not less than ten (10) samples are taken and analyzed for E. coli in a calendar month exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters as a daily maximum. Under this clause, the calculation of ten percent (10%) of the samples taken shall be limited to the lowest whole number result.

(5) Effluent limits to implement the criteria in subdivision (3) during the recreational season shall be established in NPDES permits by incorporating the following that are to be applied to the undiluted discharge:

(A) The concentration of E. coli in the undiluted discharge shall not exceed one hundred twenty-five (125) cfu or MPN per one hundred (100) milliliters as a geometric mean of the effluent samples taken in a calendar month.

(B) Not more than ten percent (10%) of all samples in a calendar month exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters as a daily maximum. Under this clause, the calculation of ten percent (10%) of the samples taken shall be limited to the lowest whole number result.

(f) This subsection establishes surface water quality for public water supply. In addition to subsection (b), the following criteria are established to protect the surface water quality at the point at which water is withdrawn for treatment for public supply:

(1) The coliform bacteria group shall not exceed the following:

(A) Five thousand (5,000) per one hundred (100) milliliters as a monthly average

value (either MPN or MF count).

(B) Five thousand (5,000) per one hundred (100) milliliters in more than twenty percent (20%) of the samples examined during any month.

(C) Twenty thousand (20,000) per one hundred (100) milliliters in more than five percent (5%) of the samples examined during any month.

(2) Taste and odor producing substances, other than those naturally occurring, shall not interfere with the production of a finished water by conventional treatment consisting of the following:

(A) Coagulation.

(B) Sedimentation.

(C) Filtration.

(D) Disinfection.

(3) The concentrations of either ~~chlorides~~ **chloride** or ~~sulfates~~ **sulfate** shall not exceed two hundred fifty (250) milligrams per liter unless due to naturally occurring sources.

(4) The concentration of dissolved solids shall not exceed seven hundred fifty (750) milligrams per liter unless due to naturally occurring sources. A specific conductance of one thousand two hundred (1,200) micromhos per centimeter (at twenty-five (25) degrees Celsius) may be considered equivalent to a dissolved solids concentration of seven hundred fifty (750) milligrams per liter.

(5) Surface waters shall be considered acceptable for public water supply if radium-226 and strontium-90 are present in amounts not exceeding three (3) and ten (10) picocuries per liter, respectively. In the known absence of strontium-90 and alpha emitters, the water supply is acceptable when the gross beta concentrations do not exceed one thousand (1,000) picocuries per liter.

(6) The:

(A) combined concentration of nitrate-N and nitrite-N shall not exceed ten (10) milligrams per liter; and

(B) concentration of nitrite-N shall not exceed one (1) milligram per liter.

(7) Chemical constituents in the waters shall not be present in such levels as to prevent, after conventional treatment, meeting the drinking water standards contained in 327 IAC 8-2, due to other than natural causes.

(g) This subsection establishes surface water quality for industrial water supply. In addition to subsection (b), the criterion to ensure protection of water quality at the point at which water is withdrawn for use (either with or without treatment) for industrial cooling and processing is that, other than from naturally occurring sources, the dissolved solids shall not exceed seven hundred fifty (750) milligrams per liter at any time. A specific conductance of one thousand two hundred (1,200) micromhos per centimeter (at twenty-five (25) degrees Celsius) may be considered equivalent to a dissolved solids concentration of seven hundred fifty (750) milligrams per liter.

(h) This subsection establishes surface water quality for agricultural uses. The criteria to ensure water quality conditions necessary for agricultural use are the same as those in subsection (b).

(i) This subsection establishes surface water quality for limited uses. The quality of waters designated for limited uses under section 19(a) of this rule shall, at a minimum, meet the following criteria:

(1) The criteria contained in subsection (b).
(2) The criteria contained in subsection (e).
(3) The criteria contained in subsection (g).
(4) The waters must be aerobic at all times.
(5) Notwithstanding subdivisions (1) through (4), the quality of a limited use stream at the point where it becomes physically or chemically capable of supporting a higher use or at its interface with a higher use water segment shall meet the criteria that are applicable to the higher use water.

(j) Additional requirements for the open waters of Lake Michigan are as follows:
(1) In addition to complying with all other applicable subsections, open waters in Lake Michigan shall meet the following criteria:

Table 8-9
Additional Criteria for Lake Michigan

Parameters	Criteria
Dissolved oxygen	Dissolved oxygen concentrations shall not be less than seven (7.0) milligrams per liter at any time at all places outside the applicable mixing zone.
pH	No pH values below six (6.0) or above nine (9.0), except daily fluctuations that exceed pH 9.0 and are correlated with photosynthetic activity, shall be permitted.
~~Chlorides~~	~~860 mg/l criterion maximum concentration~~ ~~230 mg/l criterion continuous concentration~~
Chloride	**250 mg/l[1]**
Phenols	See subsection (c)(1)
~~Sulfates~~ **Sulfate**	250 mg/l[1]
Total phosphorus	See 327 IAC 5-10-2
Total dissolved solids	750 mg/l[1]
~~Fluorides~~ **Fluoride**	1.0 mg/l[1]
Dissolved iron	300 µg/l[1]

[1] This criterion is established to minimize or prevent increased levels of this substance in Lake Michigan. For the purposes of establishing water quality-based effluent limitations based on this criterion, it shall be treated as a four (4) day average criterion.

(2) During each triennial review of the water quality standards, prior to preliminary adoption of revised rules, the department shall prepare a report for the water pollution control board on the monitoring data for the constituents in the following table (Table 8-10), as measured at the drinking water intakes in Lake Michigan. If these data indicate that the levels of the constituents are either increasing or exceed the levels in the table, the report shall provide available information on the known and potential causes of the increased levels of these parameters, the known and potential impacts on aquatic life, wildlife, and human health, and any recommended revisions of the criteria.

Table 8-10

Parameters	Levels
pH	7.5-8.5 s.u.
~~Chlorides~~ **Chloride**	
Monthly average	15 mg/l

Daily maximum	20 mg/l
~~Sulfates~~ **Sulfate**	
Monthly average	26 mg/l
Daily maximum	50 mg/l
Total phosphorus	
Monthly average	0.03 mg/l
Daily maximum	0.04 mg/l
Total dissolved solids	
Monthly average	172 mg/l
Daily maximum	200 mg/l

(Water Pollution Control Board; 327 IAC 2-1.5-8; filed Jan 14, 1997, 12:00 p.m.: 20 IR 1370; errata filed Aug 11, 1997, 4:15 p.m.: 20 IR 3376; filed Feb 14, 2005, 10:05 a.m.: 28 IR 2074; errata filed Apr 6, 2006, 2:48 p.m.: 29 IR 2546; filed Mar 18, 2008, 2:26 p.m.: 20080416-IR-327060573FRA)

SECTION 5. 327 IAC 5-2-11.4 IS AMENDED TO READ AS FOLLOWS:

327 IAC 5-2-11.4 Great Lakes system dischargers total maximum daily loads; wasteload allocations for point sources; load allocations for nonpoint sources; preliminary wasteload allocations

Authority: IC 13-14-8; IC 13-14-9; IC 13-15-1-2; IC 13-15-2-1; IC 13-18-3
Affected: IC 13-11-2; IC 13-18-4-7; IC 13-18-4-8

Sec. 11.4. (a) This subsection applies to the establishment of TMDLs for all pollutants and pollutant parameters in the Great Lakes system. Where specified, the following conditions also apply to WLAs calculated in the absence of TMDLs and to preliminary WLAs:

(1) At a minimum, TMDLs shall be established in accordance with the listing and priority setting process established in Section 303(d) of the Clean Water Act (CWA) and at 40 CFR 130.7. Where water quality standards cannot be attained immediately, TMDLs must reflect reasonable assurances that water quality standards will be attained in a reasonable period of time. TMDLs may be based on attaining water quality standards over a period of time, with specific controls on individual sources being implemented in stages. Determining the reasonable period of time in which water quality standards will be met is a case-specific determination considering a number of factors, including, but not limited to, the following:

(A) Receiving water characteristics.
(B) Persistence, behavior, and ubiquity of pollutants of concern.
(C) Type of remediation activities necessary.
(D) Available regulatory and nonregulatory controls.
(E) Requirements for attainment of water quality standards.

(2) An assessment and remediation plan that the commissioner has certified as meeting the requirements of this section pertaining to TMDLs and public participation requirements applicable to TMDLs, and that has been approved by EPA as meeting those requirements under 40 CFR 130.6, may be used in lieu of a TMDL for purposes of this section. Assessment and remediation plans under this section may include, but are not limited to, the following:

(A) Lakewide Management Plans.
(B) Remedial Action Plans.

(C) State Water Quality Management Plans.

Also, any part of an assessment and remediation plan that also satisfies one (1) or more requirements under Section 303(d) of the CWA or implementing regulations may be incorporated by reference into a TMDL as appropriate. Assessment and remediation plans under this section shall be tailored to the level of detail and magnitude for the watershed and pollutant being assessed.

(3) TMDLs, WLAs calculated in the absence of a TMDL, and preliminary WLAs must ensure attainment of applicable water quality standards including all numeric and narrative water quality criteria set forth in 327 IAC 2-1.5-8 and 327 IAC 2-1.5-16, and Tier I criteria and Tier II values established under 327 IAC 2-1.5-11 through 327 IAC 2-1.5-16.

(4) If a discharge contains one (1) or more substances for which a TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA was based on an HCC, HCV, HNC, or HNV, human health shall be protected from the potential adverse additive effects of mixtures of substances in an effluent in accordance with the following procedures:

(A) If an effluent for a particular discharger contains more than one (1) substance for which an HCC exists or for which an HCC or an HCV can be calculated, the additivity of the mixture of carcinogens shall be addressed as follows:

(i) Except as provided in item (ii), the TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA based on an HCC or HCV shall be established to protect against additive effects possibly associated with simultaneous multiple chemical human exposure to carcinogens such that the following condition is met:

$$\sum \frac{C_i}{WLA_i} \leq 1; \quad \text{For } i = 1 \text{ to } n$$

Where:

C = The adjusted TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA concentration of each separate carcinogen that shall be used in the calculation of reasonable potential in section 11.5 of this rule and water quality-based effluent limitations (WQBELs) in section 11.6 of this rule.

WLA = The TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA concentration based on the HCC or HCV for each respective carcinogen.

n = Number of WLAs based on an HCC or HCV.

(ii) Notwithstanding item (i):

(AA) the commissioner may consider, upon submission of the discharger, the use of an alternate, scientifically-based, procedure for ensuring the aggregate risk of the mixture of carcinogens remains below one (1) in one hundred thousand (100,000); or

(BB) if information is available to the commissioner demonstrating that available scientific information does not support the assumption of additivity, the TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA shall not be adjusted for each such substance.

(B) If an effluent for a particular discharger contains more than one (1) substance for which an HNC exists or for which an HNC or HNV can be calculated, the

additivity of the mixture of substances shall be addressed as follows:

(i) The incremental adverse effect of each substance shall be assumed to not be additive except as provided in item (ii).

(ii) If scientific information available to the commissioner demonstrates that the adverse effects of the components are additive, the TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA based on an HNC or HNV for each additive noncarcinogenic substance shall be established to protect against additive effects possibly associated with simultaneous multiple chemical human exposure such that the following condition is met:

$$\sum \frac{N_i}{WLA_i} \leq 1; \quad \text{For } i = 1 \text{ to } n$$

Where: N = The adjusted TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA concentration of each separate additive noncarcinogenic substance that shall be used in the calculation of reasonable potential in section 11.5 of this rule and WQBELs in section 11.6 of this rule.

WLA = The TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA concentration based on the HNC or HNV for each respective additive noncarcinogenic substance.

n = Number of WLAs based on an HNC or HNV for additive noncarcinogenic substances.

(C) Notwithstanding clauses (A) and (B), the toxicity equivalency factors (TEFs) and bioaccumulation equivalency factors (BEFs) for the chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzofurans (CDFs) shall be accounted for as follows:

(i) The TEFs and BEFs in Table 11.4-1 in item (iv) shall be used when calculating a 2,3,7,8-TCDD toxicity equivalence concentration in effluent to be used when implementing both HNC and HCC. The chemical concentration of each CDDs and CDFs in effluent shall be converted to a 2,3,7,8-TCDD toxicity equivalence concentration in effluent by:

(AA) multiplying the chemical concentration of each CDDs and CDFs in the effluent by the appropriate TEF in Table 11.4-1 in item (iv);

(BB) multiplying each product from subitem (AA) by the BEF for each CDDs and CDFs in Table 11.4-1 in item (iv); and

(CC) adding all final products from subitem (BB).

(ii) The equation for calculating the 2,3,7,8-TCDD toxicity equivalence concentration in effluent is:

$$(TEC)_{tcdd} = \sum (C)_x (TEF)_x (BEF)_x$$

Where: $(TEC)_{tcdd}$ = 2,3,7,8-TCDD toxicity equivalence concentration in effluent.

$(C)_x$ = Concentration of total chemical x in effluent.

$(TEF)_x$ = TCDD toxicity equivalency factor for x.

$(BEF)_x$ = TCDD bioaccumulation equivalency factor for x.

(iii) The 2,3,7,8-TCDD toxicity equivalence concentration in effluent shall be used when developing TMDLs, WLAs in the absence of a TMDL, or

preliminary WLAs under this section.

(iv) The following values shall be used for TEFs and BEFs for CDDs and CDFs:

Table 11.4-1
Toxicity Equivalency Factors (TEF) and
Bioaccumulation Equivalency Factors (BEF)
for CDDs and CDFs

Congener	TEF	BEF
2,3,7,8-TCDD	1.0	1.0
1,2,3,7,8-PeCDD	0.5	0.9
1,2,3,4,7,8-HxCDD	0.1	0.3
1,2,3,6,7,8-HxCDD	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.05
OCDD	0.001	0.01
2,3,7,8-TCDF	0.1	0.8
1,2,3,7,8-PeCDF	0.05	0.2
2,3,4,7,8-PeCDF	0.5	1.6
1,2,3,4,7,8-HxCDF	0.1	0.08
1,2,3,6,7,8-HxCDF	0.1	0.2
2,3,4,6,7,8-HxCDF	0.1	0.7
1,2,3,7,8,9-HxCDF	0.1	0.6
1,2,3,4,6,7,8-HpCDF	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.4
OCDF	0.001	0.02

(5) TMDLs shall include WLAs for point sources and LAs for nonpoint sources, including natural background, such that the sum of these allocations is not greater than the loading capacity of the water for the pollutant addressed by the TMDL, minus the sum of a specified margin of safety (MOS) and any capacity reserved for future growth. The components of the TMDL are as follows:

(A) Nonpoint source LAs that shall be based on any of the following:

(i) Existing pollutant loadings if changes in loadings are not reasonably anticipated to occur.

(ii) Increases in pollutant loadings that are reasonably anticipated to occur.

(iii) Anticipated decreases in pollutant loadings if such decreased loadings are technically feasible and are reasonably anticipated to occur within a reasonable time period as a result of implementation of BMPs or other load reduction measures. In determining whether anticipated decreases in pollutant loadings are technically feasible and can reasonably be expected to occur within a reasonable period of time, technical and institutional factors shall be considered. These decisions are case-specific and should reflect the particular TMDL under consideration.

(iv) Where appropriate and where sufficient data are available, contributions to the water column from sediments inside and outside of any applicable mixing zones.

(v) Where appropriate and where sufficient data are available, nonpoint source discharges resulting from wet weather events.

Monitoring data for these LAs shall be collected and analyzed in order to validate the TMDL's assumptions, to verify anticipated load reductions, to evaluate the effectiveness of controls being used to implement the TMDL, and to revise the WLAs and LAs as necessary to ensure that water quality criteria shall be achieved within the time period established in the TMDL.

(B) Each TMDL shall include an MOS sufficient to account for technical uncertainties in establishing the TMDL and shall describe the manner in which the MOS is determined and incorporated into the TMDL. The MOS may be provided by leaving a portion of the loading capacity unallocated or by using conservative modeling assumptions to establish WLAs and LAs. If a portion of the loading capacity is left unallocated to provide an MOS, the amount left unallocated shall be described. If conservative modeling assumptions are relied on to provide an MOS, the specific assumptions providing the MOS shall be identified.

(C) TMDLs may include reserved allocations of loading capacity to accommodate future growth and additional sources. Where such reserved allocations are not included in a TMDL, any increased loadings of the pollutant for which the TMDL was developed that are due to a new or expanded discharge shall not be allowed unless the TMDL is revised in accordance with these procedures to include an allocation for the new or expanded discharge.

(D) The sum of the WLAs is the portion of the loading capacity not assigned to nonpoint sources including background, or to an MOS, or reserved for future growth. Where appropriate and where sufficient data are available, WLAs shall also be developed for point source discharges resulting from wet weather events. Upon reissuance, NPDES permits for these point sources must include effluent limitations consistent with WLAs in EPA-approved or EPA-established TMDLs.

(6) If separate TMDLs are prepared for different segments of the same watershed, and the separate TMDLs each include WLAs for the same pollutant for one (1) or more of the same point sources, then WQBELs for that pollutant for the point sources shall be consistent with the most stringent of those WLAs in order to ensure attainment of all applicable water quality standards.

(7) TMDLs shall be sufficiently stringent so as to prevent accumulation of the pollutant of concern in sediments to levels injurious to designated or existing uses, human health, wildlife, and aquatic life.

(8) The representative background concentration of pollutants shall be established in accordance with this section to develop TMDLs, WLAs calculated in the absence of a TMDL, and preliminary WLAs. Background loadings may be accounted for in a TMDL through an allocation to a single background category or through individual allocations to the various background sources as follows:

(A) As used in this subsection, "background" represents all loadings resulting from the following:

(i) Flow from upstream waters into the specified watershed, waterbody, or waterbody segment for which a TMDL, WLA in the absence of a TMDL,

or preliminary WLA for the purpose of determining the need for a WQBEL is being developed.

(ii) Atmospheric deposition or sediment release or resuspension.

(iii) Chemical reactions occurring within the watershed, waterbody, or waterbody segment.

(B) When determining what available data are acceptable for use in calculating background, the commissioner shall use best professional judgment, including consideration of the sampling location and the reliability of the data through comparison to reported analytical detection levels. Pollutant degradation and transport information may be considered when utilizing pollutant loading data. Where limited or no acceptable data exist, the commissioner may require the permittee to supply the necessary data. Best professional judgment shall be used to select the one (1) data set that most accurately reflects or estimates background concentrations when data in more than one (1) of the following data sets or categories exist:

(i) Acceptable available water column data.

(ii) Water column concentrations estimated through use of acceptable available caged or resident fish tissue data.

(iii) Water column concentrations estimated through use of acceptable available or projected pollutant loading data.

(C) The representative background concentration for a substance in the specified watershed, waterbody, or waterbody segment shall be established as follows:

(i) If all the values in the data set selected in clause (B) are at or above the LOD, then the background concentration is the geometric mean of that data set.

(ii) If the data set consists of values above and below the LOD, the following procedure shall be used to determine the representative background concentration:

(AA) Each value in the data set with a value less than the LOD (nondetect) shall be assigned the value (V). The geometric mean of this adjusted data set is the representative background concentration. The value (V) is determined as follows:

$$V = (\text{LOD}) \times \left(1 - \frac{\text{Number of nondetects}}{\text{Total number of values}} \right)$$

(BB) If information is available that indicates an alternate methodology for evaluating the data set would result in a background concentration more representative of actual conditions, this alternative methodology may be used in place of the methodology contained in subitem (AA) upon approval of the commissioner.

(iii) When all of the acceptable available data in a data set or category, such as water column, caged or resident fish tissue, or pollutant loading data, are below the LOD for a substance, and the most sensitive approved analytical method available for that substance was used, then all the data for that pollutant in that data set shall be assumed to be zero (0).

(iv) Notwithstanding items (i) through (iii), the representative background concentration of whole effluent toxicity (WET) shall be assumed to be

zero (0) unless data are available that indicates that the discharge of the WET and any background WET are additive.

(9) The effluent flow used to develop TMDLs, WLAs calculated in the absence of a TMDL, and preliminary WLAs shall be determined as follows:

(A) For municipal, semipublic, and other sanitary or domestic wastewater discharges, the average design flow of the treatment facility shall be used.

(B) For industrial dischargers, the highest monthly average flow from the previous two (2) years of monitoring shall be used.

(C) Notwithstanding clauses (A) and (B), an alternate effluent flow value may be used, upon approval by the commissioner, if the discharger provides flow data that supports the alternate value (such as when a TMDL or WLA is calculated for wet weather conditions as provided in section 11.6(g)(4) of this rule). This flow data shall be included with the application for a new permit, a renewal of an existing permit, or with a request for modification of an existing permit, or when requested by the commissioner.

(D) TMDLs, WLAs calculated in the absence of a TMDL, and preliminary WLAs shall indicate the point source effluent flows used in the analyses.

(10) The portion of the receiving waterbody allocated for mixing for TMDLs, WLAs calculated in the absence of a TMDL, and preliminary WLAs shall be determined in accordance with subsection (b).

(11) TMDLs, WLAs in the absence of a TMDL, and preliminary WLAs shall be based on the assumption that a pollutant does not degrade. However, the commissioner may take into account degradation of the pollutant if each of the following conditions are met:

(A) Scientifically valid field studies or other relevant information demonstrate that degradation of the pollutant is expected to occur under the full range of environmental conditions expected to be encountered.

(B) Scientifically valid field studies or other relevant information addresses other factors that affect the level of pollutants in the water column, including, but not limited to, the following:

(i) Resuspension of sediments.

(ii) Chemical speciation.

(iii) Biological and chemical transformation.

(C) Notwithstanding clauses (A) and (B), TMDLs, WLAs in the absence of a TMDL, and preliminary WLAs conducted for chlorine and WET shall be based on the assumption that the parameter does degrade unless data for the waterbody are available indicating otherwise.

(12) As used in this section, "loading capacity" refers to the greatest amount of loading that a water can receive without violating water quality standards. The loading capacity is initially calculated at the farthest downstream location in the watershed drainage basin. The maximum allowable loading consistent with the attainment of each applicable numeric criterion or value for a given pollutant is determined by multiplying the applicable criterion or value by the flow at the farthest downstream location in the tributary basin at the design flow condition described under subsection (b) and by using appropriate conversion factors. This loading is then compared to the loadings at sites within the basin to assure that applicable numeric criteria or values for a given pollutant are not exceeded at all applicable sites. The lowest load is then selected as the loading capacity.

(13) The ambient water quality characteristics used to develop TMDLs, WLAs calculated

in the absence of a TMDL, and preliminary WLAs shall be determined as follows:

(A) For ammonia (as N), **chloride,** metals dependent on hardness, and pentachlorophenol, the appropriate water quality characteristics shall be obtained at a location downstream of the point of discharge, or for Lake Michigan, outside the applicable mixing zone and shall be determined as follows:

(i) For ammonia (as N), the seventy-fifth percentile of the pH and temperature. If a seasonal TMDL, WLA calculated in the absence of a TMDL, or preliminary WLA is developed for ammonia, the pH and temperature data shall be obtained from the appropriate seasonal period.

(ii) For chloride, the fiftieth percentile of the hardness and sulfate.

~~(ii)~~ **(iii)** For metals dependent on hardness, the fiftieth percentile of the hardness.

~~(iii)~~ **(iv)** For pentachlorophenol, the fiftieth percentile of the pH.

(B) If any of the data required under clause (A) are not available for the waterbody, the data shall either be obtained from similar nearby streams or the permittee will be required to obtain the necessary data. For discharges to Lake Michigan, data from Lake Michigan shall be required.

(C) The use of the data required in clause (A) is intended to determine values of those water quality characteristics that are representative of those characteristics at design conditions. If it is demonstrated that an alternate method of determining these characteristics for a specific receiving waterbody would result in values more representative of the characteristics at design conditions, then this alternate method may be used to determine the water quality characteristics.

(b) The following requirements shall be applied in establishing the portion of the receiving waterbody allocated for mixing for TMDLs, WLAs in the absence of TMDLs, and preliminary WLAs:

(1) The following procedures shall be used to establish the portion of the receiving waterbody allocated for mixing for TMDLs, WLAs in the absence of TMDLs, and preliminary WLAs for a BCC:

(A) For purposes of this subsection, new and existing discharges are determined as follows:

(i) New discharges are defined as:

(AA) discharges from new Great Lakes dischargers; or

(BB) new or expanded discharges from an existing Great Lakes discharger.

(ii) Existing discharges are defined as all discharges of BCCs not included in item (i).

(B) There shall be no mixing zone available for a new discharge of a BCC to the Great Lakes system. WLAs established through TMDLs, WLAs in the absence of TMDLs, and preliminary WLAs for a new discharge of a BCC shall be set equal to the most stringent applicable water quality criteria or values for the BCC.

(C) A mixing zone may be allocated for a BCC for an existing discharge to the Great Lakes system under subdivisions (2) and (3) until January 1, 2004, except for a discharge into the open waters of Lake Michigan. WLAs established through TMDLs, WLAs established in the absence of TMDLs, and preliminary WLAs for all discharges, both new and existing, into the open waters of Lake Michigan shall be set equal to the most stringent applicable water quality criteria or values for the

BCC.
(D) Except as provided in clauses (E) and (F), NPDES permits shall not authorize mixing zones for existing discharges of a BCC to the Great Lakes system after January 1, 2004. After January 1, 2004, WLAs established through TMDLs, WLAs established in the absence of TMDLs, and preliminary WLAs for all discharges of a BCC to the Great Lakes system shall be set equal to the most stringent applicable water quality criteria or values for the BCC.
(E) The commissioner may grant mixing zones for any existing discharge of a BCC to the Great Lakes system beyond the date specified in clause (D) where it can be demonstrated, on a case-by-case basis, that failure to grant a mixing zone would preclude water conservation measures that would lead to the overall load reduction of the BCC, even though higher concentrations of the BCC occur in the effluent. Such mixing zones must also be consistent with subdivisions (2) and (3).
(F) The commissioner may grant mixing zones, consistent with subdivisions (2) and (3), beyond the date specified in clause (D) for any existing discharge of a BCC to the Great Lakes system upon the request of a discharger subject to the following limited circumstances:

(i) The commissioner determines the following:

(AA) The discharger is in compliance with and will continue to implement all applicable technology-based treatment and pretreatment requirements of Sections 301, 302, 304, 306, 307, 401, and 402 of the CWA, and is in compliance with its existing NPDES WQBELs, including those based on a mixing zone.

(BB) The discharger has reduced and will continue to reduce the loading of the BCC for which a mixing zone is requested to the maximum extent possible.

(ii) In making the determination in item (i), the commissioner shall consider the following information submitted by the discharger:

(AA) The availability, feasibility, cost effectiveness, and environmental benefits of additional controls or pollution prevention measures for reducing and ultimately eliminating the BCC for that discharger, including those used by similar dischargers. As used in this item, "pollution prevention" has the meaning set forth in the federal Pollution Prevention Act of 1990 (42 U.S.C. 13101 et seq.).

(BB) Whether the discharger or affected communities will suffer unreasonable economic effects if the mixing zone is eliminated.

(CC) The extent to which the discharger will implement an ambient monitoring plan to ensure compliance with water quality criteria at the edge of any authorized mixing zone or to ensure consistency with any applicable TMDL or such other strategy consistent with this section.

(DD) Other information the commissioner deems appropriate.

(iii) Any exceptions to the mixing zone elimination provision for an existing discharge of a BCC granted under this clause shall comply with the following:

(AA) Not result in any less stringent limitations than those existing upon or after the effective date of this rule.

(BB) Not likely jeopardize the continued existence of any endangered or threatened species listed under Section 4 of the ESA or result in the destruction or adverse modification of such species' critical habitats.

(CC) Be limited to one (1) permit term unless the commissioner makes a new determination in accordance with this subdivision for each successive permit application in which a mixing zone for the BCC is sought.

(DD) Reflect all information relevant to the size of the mixing zone considered under item (ii).

(EE) Protect all designated and existing uses of the receiving water.

(FF) Meet all applicable aquatic life, wildlife, and human health criteria and values at the edge of the mixing zone and, as appropriate, within the mixing zone or be consistent with any appropriate TMDL or such other strategy consistent with this section.

(GG) Ensure the discharger has developed and conducted a pollutant minimization program for the BCC if required to do so under section 11.6 of this rule.

(HH) Ensure that alternative means for reducing BCCs elsewhere in the watershed are evaluated.

(G) For each draft NPDES permit that would allow a mixing zone for one (1) or more BCCs after January 1, 2004, the fact sheet or statement of basis for the draft permit, shall:

(i) specify the mixing provisions used in calculating the permit limits; and

(ii) identify each BCC for which a mixing zone is proposed.

(2) The following addresses conditions for deriving TMDLs, WLAs in the absence of TMDLs, and preliminary WLAs for open waters of Lake Michigan, inland lakes, and other waters of the Great Lakes system with no appreciable flow relative to their volumes:

(A) For discharges into the open waters of Lake Michigan, the following requirements apply:

(i) To prevent acute toxicity to aquatic life, WLAs established in a TMDL, WLAs in the absence of a TMDL, and preliminary WLAs shall be determined as follows:

(AA) For allocations based on an acute aquatic life criterion or value, the CMC or SMC shall not be exceeded outside the zone of initial dilution and the FAV shall not be exceeded in the undiluted discharge, unless a mixing zone demonstration is conducted and approved under subdivision (4), in which case the CMC or SMC shall be met outside the applicable alternate mixing zone.

(BB) For allocations implementing the narrative acute WET criterion, one and zero-tenths (1.0) TU_a shall not be exceeded in the undiluted discharge, unless a mixing zone demonstration is conducted and approved under subdivision (4), in which case three-tenths (0.3) TU_a shall be met outside the applicable alternate mixing zone.

(ii) To prevent chronic toxicity to aquatic life, human health, and wildlife, WLAs established in a TMDL, WLAs in the absence of a TMDL, and preliminary WLAs shall be determined as follows:

(AA) For allocations based on a chronic criterion or value (CCC or SCC; HNC or HNV; HCC or HCV; or WC or WV), the chronic criterion or value shall not be exceeded in the undiluted discharge unless a mixing zone demonstration is conducted and approved under subdivision (4), in which case the chronic criterion or value shall be met outside the applicable alternate mixing zone.

(BB) For allocations implementing the narrative chronic WET criterion, one and zero-tenths (1.0) TU_c shall not be exceeded in the undiluted discharge unless a mixing zone demonstration is conducted and approved under subdivision (4), in which case one and zero-tenths (1.0) TU_c shall be met outside the applicable alternate mixing zone.

(iii) WLAs established in a TMDL, WLAs in the absence of a TMDL, and preliminary WLAs based on the criterion for **chloride,** ~~sulfates~~ **sulfate,** total dissolved solids, ~~fluorides~~ **fluoride,** or dissolved iron under 327 IAC 2-1.5-8(j) shall ensure that the criterion not be exceeded in the undiluted discharge unless a mixing zone demonstration is conducted and approved under subdivision (4), in which case the criterion shall be met outside the applicable alternate mixing zone.

(iv) If mixing zones from two (2) or more proximate sources interact or overlap, the combined effect must be evaluated to ensure that applicable criteria and values will be met in the area where any applicable mixing zones overlap.

(v) In no case shall a mixing zone be granted that exceeds the area where discharge-induced mixing occurs.

(B) For discharges into inland lakes and other waters of the Great Lakes system with no appreciable flow relative to their volumes (other than the open waters of Lake Michigan), no mixing zone will be allowed and water quality criteria or values will apply to the undiluted discharge.

(C) Appropriate mixing zone assumptions to be used in calculating load allocations for nonpoint sources shall be determined on a case-by-case basis.

(D) In no case shall a mixing zone be granted that would likely jeopardize the continued existence of any endangered or threatened species listed under Section 4 of the ESA or result in the destruction or adverse modification of such species' critical habitats.

(3) The following describes conditions for deriving TMDLs, WLAs in the absence of TMDLs, and preliminary WLAs for tributaries of the Great Lakes system that exhibit appreciable flows relative to their volumes:

(A) The following stream design flows shall be used unless data exist to demonstrate that an alternative stream design flow is appropriate for stream-specific and pollutant-specific conditions:

(i) For purposes of calculating a TMDL, WLAs in the absence of a TMDL, or preliminary WLAs, using a steady-state model, the stream design flows shall be as follows:

(AA) For an acute aquatic life criterion or value, the one (1) day,

ten (10) year stream design flow ($Q_{1,10}$).

(BB) To implement the narrative acute WET criterion, when a mixing zone demonstration is conducted and approved under subdivision (4), the one (1) day, ten (10) year stream design flow ($Q_{1,10}$).

(CC) For a chronic aquatic life criterion or value, the seven (7) day, ten (10) year stream design flow ($Q_{7,10}$).

(DD) To implement the narrative chronic WET criterion, the seven (7) day, ten (10) year stream design flow ($Q_{7,10}$).

(EE) For a drinking water human health criterion or value, the harmonic mean flow at the point of the public water system intake.

(FF) For a nondrinking water human health criterion or value, the harmonic mean flow at the point of discharge.

(GG) For a WC or WV, the ninety (90) day, ten (10) year stream design flow ($Q_{90,10}$).

(ii) TMDLs, WLAs in the absence of TMDLs, and preliminary WLAs calculated using dynamic modelling do not need to incorporate the stream design flows specified in item (i).

(iii) TMDLs, WLAs in the absence of TMDLs, and preliminary WLAs calculated for intermittent or controlled discharges may use alternate stream design flows if these alternate design flows will ensure compliance with water quality criteria and values.

(B) To prevent acute toxicity, WLAs and LAs established in a TMDL, WLAs in the absence of a TMDL, and preliminary WLAs shall be determined as follows:

(i) For allocations based on an acute aquatic life criterion or value, the CMC or SMC shall not be exceeded outside the zone of initial dilution and the FAV shall not be exceeded in the undiluted discharge unless a mixing zone demonstration is conducted and approved under subdivision (4), in which case the CMC or SMC shall be met outside the applicable alternate mixing zone.

(ii) For allocations implementing the narrative acute WET criterion, one and zero-tenths (1.0) TU_a shall not be exceeded in the undiluted discharge unless a mixing zone demonstration is conducted and approved under subdivision (4), in which case three-tenths (0.3) TU_a shall be met outside the applicable alternate mixing zone.

(C) To protect aquatic life, wildlife, and human health from chronic effects, including chronic WET, WLAs and LAs established in a TMDL, WLAs in the absence of a TMDL, and preliminary WLAs shall be calculated using a dilution fraction no greater than twenty-five percent (25%) of the stream design flow unless a mixing zone demonstration under subdivision (4) is conducted and approved.

(D) If mixing zones from two (2) or more proximate sources interact or overlap, the combined effect must be evaluated to ensure that applicable criteria and values will be met in the area where any applicable mixing zones overlap.

(E) In no case shall a permitting authority grant a mixing zone that would likely jeopardize the continued existence of any endangered or threatened species listed under Section 4 of the ESA or result in the destruction or adverse modification of such species' critical habitats.

(4) An alternate mixing zone that is allowed under subdivision (2) or (3) may be granted upon the request of the discharger subject to the following requirements:

(A) Alternate mixing zones are granted on a pollutant-by-pollutant and criterion-by-criterion basis. Any discharger seeking a mixing zone other than that specified by subdivision (2) or (3) shall submit an application for an alternate mixing zone for consideration by the commissioner. The alternate mixing zone application must do the following:

(i) Document the characteristics and location of the outfall structure, including whether technologically-enhanced mixing will be utilized.

(ii) Document the amount of dilution occurring at the boundaries of the proposed mixing zone and the size, shape, and location of the area of mixing, including the manner in which diffusion and dispersion occur.

(iii) For sources discharging to the open waters of Lake Michigan, define the location at which discharge-induced mixing ceases.

(iv) For sources discharging to tributaries of the Great Lakes system that exhibit appreciable flows relative to their volumes and seeking an alternate mixing zone for an acute aquatic life criterion or value or for acute WET, define the location at which discharge-induced mixing ceases under stream design flow conditions.

(v) Document the physical, including substrate character and geomorphology, chemical, and biological characteristics of the receiving waterbody, including whether the receiving waterbody supports indigenous, endemic, or naturally occurring species.

(vi) Document the physical, chemical, and biological characteristics of the effluent.

(vii) Document the synergistic effects of overlapping mixing zones or the aggregate effects of adjacent mixing zones.

(viii) Show whether organisms would be attracted to the area of mixing as a result of the effluent character.

(B) The commissioner may grant the alternate mixing zone if the discharger demonstrates the following:

(i) The mixing zone would not interfere with or block passage of fish or aquatic life.

(ii) The level of the pollutant permitted in the waterbody would not likely jeopardize the continued existence of any endangered or threatened species listed under Section 4 of the ESA or result in the destruction or adverse modification of such species' critical habitats.

(iii) The mixing zone would not extend to drinking water intakes.

(iv) The mixing zone would not impair or otherwise interfere with the designated or existing uses of the receiving water or downstream waters.

(v) The mixing zone would not promote undesirable aquatic life or result in a dominance of nuisance species.

(vi) By allowing the additional mixing:

(AA) substances will not settle to form objectionable deposits;

(BB) floating debris, oil, scum, and other matter in concentrations that form nuisances will not be produced; and

(CC) objectionable color, odor, taste, or turbidity will not be produced.

(C) In no case shall an alternate mixing zone for an acute aquatic life criterion or value or for acute WET be granted unless the discharger utilizes a submerged, high rate diffuser outfall structure (or the functional equivalent) that provides turbulent initial mixing and minimizes organism exposure time.

(D) In no case shall an alternate mixing zone for an acute aquatic life criterion or value or for acute WET be granted that exceeds the area where discharge-induced mixing occurs.

(E) In no case shall an alternate mixing zone for a discharge into the open waters of Lake Michigan be granted that exceeds the area where discharge-induced mixing occurs.

(F) Upon receipt of an application for an alternate mixing zone, the commissioner shall provide notice, request comment, and, if requested, schedule and hold a public meeting on the application in accordance with section 11.2 of this rule.

(5) Except for discharges into the open waters of Lake Michigan, notwithstanding subdivisions (2) through (4), the commissioner may deny any mixing zone for:

(A) a discharge;

(B) certain substances in a discharge; or

(C) a criterion or value for any substance in a discharge;

based upon a determination of adverse human health, aquatic life, or wildlife effects. The commissioner shall identify and document the rationale for this decision.

(6) For discharges into the open waters of Lake Michigan, if all of the conditions for approval of an alternate mixing zone are met in accordance with subdivision (4), the alternate mixing zone shall be granted unless the commissioner determines that the mixing zone should be denied based upon a consideration of harm to human health, aquatic life, or wildlife. The commissioner shall evaluate all available information, including information submitted by the public, relevant to the consideration of harm to human health, aquatic life, or wildlife. The commissioner shall identify the harm to human health, aquatic life, or wildlife, and document the rationale for this decision.

(7) The commissioner's evaluation of a mixing zone for a discharge into the open waters of Lake Michigan under subdivisions (2), (4), and (6) shall constitute the evaluation required by IC 13-18-4-7. Any decision regarding the granting or denial of a mixing zone for a discharge into Lake Michigan shall be included in the public notice of the tentative decision on the draft new, renewed, or modified permit. The basis for the tentative decision, including the commissioner's rationale for concluding whether or not the requirements of IC 13-18-4-7 are satisfied, shall be included in the briefing memo or fact sheet that accompany the tentative decision on the draft new, renewed, or modified permit.

(c) WLAs calculated in the absence of a TMDL and preliminary WLAs shall be determined using the conservation of mass equations as follows unless an alternate methodology is approved by the commissioner:

(1) For the calculations contained within this subsection, the following apply:

(A) WQC_c = The chronic water quality criterion or value. A chronic water quality criterion or value is any of the following:

(i) CCC or SCC. If the CCC or SCC for a metal is expressed in the form of dissolved metal, the CCC or SCC shall be set equal to $C_{instream}$ determined for the CCC or SCC in accordance with subdivision (6).

(ii) The numeric interpretation of the narrative chronic WET criterion (one

and zero-tenths (1.0) TU_c).
(iii) HNC or HNV.
(iv) HCC or HCV.
(v) WC or WV.
(vi) The criterion for ~~sulfates,~~ **chloride, sulfate,** total dissolved solids, ~~fluorides~~ **fluoride,** or dissolved iron under 327 IAC 2-1.5-8(j).

(B) WQC_a = The CMC or SMC or, if a mixing zone demonstration for acute WET is conducted and approved under subsection (b)(4), three-tenths (0.3) TU_a for WET. If the CMC or SMC for a metal is expressed in the form of dissolved metal, the CMC or SMC shall be set equal to $C_{instream}$ determined for the CMC or SMC in accordance with subdivision (8).

(C) FAV = Two (2) times the CMC or SMC. If the CMC or SMC for a metal is expressed in the form of dissolved metal, the FAV shall equal two (2) times $C_{instream}$ determined for the CMC or SMC in accordance with subdivision (8).

(D) Q_e = The facility effluent flow as determined by subsection (a)(9).

(E) Q_w = The portion of the receiving waterbody allocated for mixing under subsection (b). If C_b is greater than the water quality criterion or value, a value of zero (0) shall be used for Q_w.

(F) C_b = The representative background concentration determined by subsection (a)(8).

(G) DF = Dilution factor = $\frac{Q_w+Q_e}{Q_e}$.

(H) Q_z = The portion of the receiving waterbody allocated for mixing in the zone of initial dilution. For discharges into tributaries that exhibit appreciable flows relative to their volumes, $Q_z = Q_e$ or the $Q_{1,10}$, whichever is less. For discharges into the open waters of Lake Michigan, $Q_z = Q_e$. If C_b is greater than WQC_a, a value of zero (0) shall be used for Q_z.

(2) WLAs for discharges into tributaries that exhibit appreciable flows relative to their volumes based on protection from acute aquatic effects shall be determined as follows:

(A) For a discharge without an approved alternate mixing zone under subsection (b)(4), the equation resulting in the lesser WLA shall be used:

(i) WLA = FAV (or 1.0 TU_a for WET); or

(ii) $$WLA = \frac{WQC_a(Q_e + Q_z) - (Q_z)(C_b)}{Q_e}$$

(B) For a discharge with an approved alternate mixing zone under subsection (b)(4), the following equation shall be used:

$$WLA = (WQC_a)(DF) - (C_b)(DF-1)$$

(3) WLAs for discharges into tributaries that exhibit appreciable flows relative to their volumes based on protection from chronic effects shall be determined as follows:

$$WLA = \frac{WQC_c(Q_e + Q_w) - (Q_w)(C_b)}{Q_e}$$

(4) WLAs for discharges into the open waters of Lake Michigan based on protection from acute aquatic effects shall be determined as follows:

(A) For a discharge without an approved alternate mixing zone under subsection (b)(4), the equation resulting in the lesser WLA shall be used:

(i) WLA = FAV (or 1.0 TU_a for WET); or

(ii) $$WLA = \frac{WQC_a(Q_e + Q_z) - (Q_z)(C_b)}{Q_e}$$

(B) For a discharge with an approved alternate mixing zone under subsection (b)(4), the following equation shall be used:

$$WLA = (WQC_a)(DF) - (C_b)(DF-1)$$

(5) WLAs for discharges into the open waters of Lake Michigan based on protection from chronic effects shall be determined as follows:

(A) For a discharge without an approved alternate mixing zone under subsection (b)(4), the following equation shall be used:

$$WLA = WQC_c$$

(B) For a discharge with an approved alternate mixing zone under subsection (b)(4), the following equation shall be used:

$$WLA = (WQC_c)(DF) - (C_b)(DF-1)$$

(6) WLAs for discharges into inland lakes and other waters of the Great Lakes system with no appreciable flow relative to their volumes (other than the open waters of Lake Michigan) based on protection from acute aquatic effects shall be determined as follows:

$$WLA = WQC_a$$

(7) WLAs for discharges into inland lakes and other waters of the Great Lakes system with no appreciable flow relative to their volumes (other than the open waters of Lake Michigan) based on protection from chronic effects shall be determined as follows:

$$WLA = WQC_c$$

(8) The following procedures shall be used to calculate $C_{instream}$, the total recoverable metal concentration outside the mixing zone that equates to an acute or chronic aquatic life water quality criterion or value expressed in the form of dissolved metal:

(A) For a CMC or SMC expressed in the form of dissolved metal, $C_{instream}$ shall be calculated by dividing the CMC or SMC by the acute translator found in clause (D).

(B) For a CCC or SCC expressed in the form of dissolved metal, $C_{instream}$ shall be calculated by dividing the CCC or SCC by the chronic translator found in clause (D).

(C) If all approved analytical methods for the metal inherently measure only its dissolved form, such as hexavalent chromium, $C_{instream}$ shall not be calculated and the acute and chronic aquatic life water quality criteria or values expressed in the form of dissolved metal shall be used in the calculation of WLAs.

(D) Unless a site-specific translator is determined in accordance with clause (E), the following translators shall be used:

Table 11.4-2
Metals Translators
Dissolved to Total Recoverable

Substances	Acute Translators	Chronic Translators
Arsenic (III)	1.000	1.000

Cadmium	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]
Chromium (III)	0.316	0.860
Copper	0.960	0.960
Mercury	0.85	0.85
Nickel	0.998	0.997
Selenium	0.922	0.922
Zinc	0.978	0.986

(E) A discharger or proposed discharger may request the use of an alternate translator by using site-specific data. The discharger must conduct a site-specific study to identify the ratio of the dissolved fraction to the total recoverable fraction for a metal in the receiving waterbody outside the mixing zone. If the discharger provides an acceptable study, and other provisions of 327 IAC 2-1.5 and this article are satisfied (such as antibacksliding and antidegradation), the commissioner shall use the site-specific translator. A translator derived for one (1) discharge into a waterbody segment may be applied to other discharges on the same waterbody segment if the translator would adequately represent the site-specific conditions applicable to the other discharges.

(d) Notwithstanding subsections (a) through (c), the pollutants contained in this subsection shall be addressed as follows:

(1) The pH requirements contained in 327 IAC 2-1.5-8(c)(2) and 327 IAC 2-1.5-8(j) apply to the undiluted discharge.

(2) The bacteriological criteria contained in 327 IAC 2-1.5-8(e) apply to the undiluted discharge.

(3) Models, approved by the commissioner, that ensure compliance with the applicable water quality criteria for the following parameters shall be used:

(A) Dissolved oxygen criteria contained in 327 IAC 2-1.5-8(c)(3), 327 IAC 2-1.5-8(d)(1), and 327 IAC 2-1.5-8(j).

(B) Thermal requirements contained in 327 IAC 2-1.5-8(c)(4) and 327 IAC 2-1.5-8(d)(2).

(C) Criteria for the protection of public water supplies contained under 327 IAC 2-1.5-8(f).

(D) Criteria for the protection of industrial water supplies contained in 327 IAC 2-1.5-8(g).

(Water Pollution Control Board; 327 IAC 5-2-11.4; filed Jan 14, 1997, 12:00 p.m.: 20 IR 1441; errata filed Aug 11, 1997, 4:15 p.m.: 20 IR 3379; filed Feb 14, 2005, 10:05 a.m.: 28 IR 2102; errata filed Jul 6, 2005, 3:12 p.m.: 28 IR 3582)

SECTION 6. 327 IAC 5-2-11.5 IS AMENDED TO READ AS FOLLOWS:

327 IAC 5-2-11.5 Great Lakes system dischargers determination of reasonable potential to exceed water quality standards

Authority: IC 13-14-8; IC 13-14-9; IC 13-15-1-2; IC 13-15-2-1; IC 13-18-3

Affected: IC 13-11-2; IC 13-18-4

Sec. 11.5. (a) If the commissioner determines that a pollutant or pollutant parameter (either conventional, nonconventional, a toxic substance, or whole effluent toxicity (WET)) is or may be discharged into the Great Lakes system at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable narrative criterion or numeric water quality criterion or value under 327 IAC 2-1.5, the commissioner shall incorporate water quality-based effluent limitations (WQBELs) in an NPDES permit that will ensure compliance with the criterion or value. The commissioner shall exercise best professional judgment, taking into account the:

(1) source and nature of the discharge;

(2) existing controls on point and nonpoint sources of pollution;

(3) variability of the pollutant or pollutant parameter in the effluent; and

(4) where appropriate, dilution of the effluent in the receiving water.

In all cases, the commissioner shall use any valid, relevant, representative information pertaining to the discharge of the pollutant.

(b) If the commissioner determines that a substance is or may be discharged into the Great Lakes system at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any numeric criterion for a toxic substance contained in 327 IAC 2-1.5-8(b)(3), Table 8-1, 327 IAC 2-1.5-8(b)(5), **327 IAC 2-1.5-8(b)(6),** Table 8-3, ~~327 IAC 2-1.5-8(b)(6)~~ **327 IAC 2-1.5-8(b)(7),** Table 8-4, 327 IAC 2-1.5-16(g), Table 16-1, a criterion for ammonia contained under 327 IAC 2-1.5-8(c)(5), a criterion for ~~sulfates,~~ **chloride, sulfate,** total dissolved solids, ~~fluorides,~~ **fluoride,** or dissolved iron under 327 IAC 2-1.5-8(j), or a Tier I criterion or Tier II value established under 327 IAC 2-1.5-11 through 327 IAC 2-1.5-16, the commissioner shall incorporate WQBELs in an NPDES permit for the discharge of that pollutant, and in all cases, the commissioner shall use any valid, relevant, representative information pertaining to the discharge of the substance as follows:

(1) When facility-specific effluent monitoring data for a substance are available, the commissioner may take into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and, where appropriate, the dilution of the effluent in the receiving water in making the determination whether to develop preliminary effluent limitations (PELs) and comparing those effluent limitations to the projected effluent quality (PEQ) of the discharge in accordance with the following procedures:

(A) The commissioner shall develop PELs for the discharge of a pollutant from a point source using the following procedures:

(i) The commissioner shall develop preliminary WLAs for the discharge of the pollutant from the point source to protect human health, wildlife, acute aquatic life, and chronic aquatic life, based upon the following:

(AA) Any existing numeric criterion for a toxic substance contained in 327 IAC 2-1.5-8(b)(3), Table 8-1, 327 IAC 2-1.5-8(b)(5), **327 IAC 2-1.5-8(b)(6),** Table 8-3, ~~327 IAC 2-1.5-8(b)(6)~~ **327 IAC 2-1.5-8(b)(7),** Table 8-4, 327 IAC 2-1.5-16(g), Table 16-1, or 327 IAC 2-1.5-8(c)(5) or a site-specific modification to an existing numeric criterion established under 327 IAC 2-1.5-16.

(BB) Where there is no existing numeric criterion, the commissioner shall calculate a Tier I criterion for such substance for the protection of human health, wildlife, and aquatic life using the methodologies under 327 IAC 2-1.5-11 (aquatic life), 327 IAC

2-1.5-14 (human health), 327 IAC 2-1.5-15 (wildlife), and 327 IAC 2-1.5-16 (site-specific modifications).

(CC) Where there is insufficient data to calculate a Tier I criterion, the commissioner shall calculate a Tier II value for such substance for the protection of human health and aquatic life using the methodologies under 327 IAC 2-1.5-12 (aquatic life), 327 IAC 2-1.5-14 (human health), and 327 IAC 2-1.5-16 (site-specific modifications).

(DD) Where there is insufficient data to calculate a Tier II value, the commissioner shall apply the procedure in subdivision (3) to determine whether data must be generated to calculate a Tier II value.

(ii) The commissioner shall develop a preliminary WLA for the discharge of ~~sulfates,~~ **chloride, sulfate,** total dissolved solids, ~~fluorides,~~ **fluoride,** or dissolved iron, in addition to the preliminary WLAs developed for the parameter under item (i), based on the numeric criterion for the substance under 327 IAC 2-1.5-8(j) when applicable.

(iii) Section 11.4(c) of this rule shall be used as the basis for determining preliminary WLAs in accordance with items (i) and (ii).

(iv) The commissioner shall use the preliminary WLAs developed under items (i) through (iii) to develop monthly and daily PELs in accordance with the procedure for converting WLAs into WQBELs under section 11.6(c) of this rule.

(B) The commissioner shall determine the PEQ as follows:

(i) When monthly average data are available, calculated using at least two (2) data points over the period of a month, the monthly PEQ shall be determined as follows:

(AA) The commissioner shall identify the number of monthly averages of the effluent data and the coefficient of variation of the monthly averages of the effluent data.

(BB) The commissioner shall obtain the appropriate multiplying factor from subsection (h) based on the information obtained in subitem (AA).

(CC) The maximum of the monthly average values shall be multiplied by the multiplying factor determined under subitem (BB) to determine the monthly PEQ.

(ii) When monthly average data are not available, the monthly PEQ shall be identical to the daily PEQ determined under item (iii). An alternate method of calculating monthly averages may be used if the applicant demonstrates that this alternate method results in monthly averages representative of actual conditions at the facility. Monthly averages calculated under this item shall be used to determine the monthly PEQ using the procedure in item (i).

(iii) The daily PEQ shall be determined as follows:

(AA) The commissioner shall identify the number of daily effluent samples and the coefficient of variation of the daily effluent samples.

(BB) The commissioner shall obtain the appropriate multiplying

factor from subsection (h) based on the information obtained in subitem (AA).

(CC) The maximum of the daily effluent samples shall be multiplied by the multiplying factor determined under subitem (BB) to determine the daily PEQ.

(iv) The coefficient of variation shall be calculated as the ratio of the standard deviation of the daily or monthly effluent data divided by the arithmetic average of the effluent data, except that where there are fewer than ten (10) data points the coefficient of variation shall be specified as six-tenths (0.6).

(v) In lieu of the procedures under items (i) through (iv), the commissioner shall allow the use of an alternate procedure for the determination of the PEQ if the applicant demonstrates that the alternate statistical procedure meets the following:

(AA) Is a scientifically defensible statistical method.

(BB) Specifies the daily PEQ as the ninety-fifth percentile of the distribution of the projected population of daily values of the facility-specific effluent monitoring data.

(CC) Specifies the monthly PEQ as the ninety-fifth percentile of the distribution of the projected population of monthly average values of the facility-specific effluent monitoring data.

(DD) Accounts for and captures the long term daily and monthly variability of the effluent quality.

(EE) Accounts for limitations associated with sparse data sets.

(FF) Assumes a lognormal distribution of the facility-specific effluent data unless otherwise shown by the effluent data set.

(C) The commissioner shall establish WQBELs in the NPDES permit for each substance that:

(i) the monthly PEQ developed under clause (B) exceeds the monthly PEL developed under clause (A); or

(ii) the daily PEQ developed under clause (B) exceeds the daily PEL developed under clause (A).

(D) If facility-specific effluent monitoring data for a metal are available in the form of dissolved metal and the PELs for the metal developed under clause (A) are based on an acute or chronic aquatic life water quality criterion or value expressed in the form of dissolved metal, the commissioner shall make the determination under clause (C) using PEQs and PELs in the form of dissolved metal if the following conditions are satisfied:

(i) The discharger provides an acceptable site-specific study that shows that the metal in the effluent does not become more dissolved in the receiving waterbody outside the mixing zone.

(ii) Representative data are available from the receiving waterbody to calculate the background concentration of the metal in accordance with section 11.4(a)(8) of this rule and, if applicable, the hardness of the receiving waterbody in accordance with section 11.4(a)(13) of this rule.

(iii) The facility-specific effluent monitoring data in the form of dissolved metal are representative of the magnitude and variability of the metal in the effluent.

(iv) The PEQs in the form of dissolved metal are determined under clause (B) using the effluent monitoring data in item (iii).

(v) The PELs in the form of dissolved metal are developed as follows:

(AA) Preliminary WLAs in the form of dissolved metal are developed consistent with section 11.4(c) of this rule and using the receiving waterbody data in item (ii) to protect acute and chronic aquatic life.

(BB) The preliminary WLAs in subitem (AA) are used to develop monthly and daily PELs in accordance with section 11.6(c) of this rule.

(vi) A determination under clause (C) using PEQs and PELs developed under this item in the form of total recoverable metal shows that the commissioner is not required to establish WQBELs in the NPDES permit for the metal. The PEQs and PELs shall be developed as follows:

(AA) PEQs in the form of total recoverable metal shall be determined under clause (B) using facility-specific effluent monitoring data in the form of total recoverable metal that is comparable to the data in item (iii).

(BB) Monthly and daily PELs in the form of total recoverable metal shall be developed using preliminary WLAs developed under section 11.4(c) of this rule for all the applicable criteria and values for the metal that are expressed in the form of total recoverable metal and in accordance with section 11.6(c) of this rule. The preliminary WLAs shall be calculated using the receiving waterbody data in item (ii).

(2) When facility-specific effluent monitoring data for a substance are not available, the commissioner shall exercise best professional judgment, taking into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, and, where appropriate, the dilution of the effluent in the receiving water:

(A) for a new Great Lakes discharger, to develop an estimated monthly and daily PEQ necessary to make a determination under this subsection; or

(B) for an existing Great Lakes discharger, to determine whether it is necessary to require the applicant to collect the data required to make a determination under this subsection.

(3) The commissioner shall develop the necessary data to calculate Tier II values where such data does not currently exist as follows:

(A) Except as provided in clauses (B) and (D) or subdivision (4), for each toxic substance that a permittee reports as known or believed to be present in its effluent, or that the commissioner reasonably believes may be present in the effluent, and for which pollutant data sufficient to calculate Tier II values for noncancer human health, acute aquatic life, or chronic aquatic life do not exist, the commissioner shall take the following actions:

(i) For those effects (noncancer human health, acute aquatic life, or chronic aquatic life) for which sufficient data do not exist, the commissioner shall use all available, relevant information, including QSAR information and other relevant toxicity information, to estimate ambient screening values for such pollutant that will protect humans from health effects other than cancer, and aquatic life from acute and chronic

effects.

(ii) Using the procedures under subdivision (1), the commissioner shall develop PELs for the discharge of the pollutant from the point source to protect human health, acute aquatic life, and chronic aquatic life based upon the estimated ambient screening values.

(iii) The commissioner shall compare the PEQs developed according to the procedures under subdivision (1) to the PELs developed under item (ii). If the monthly or daily PEQ exceeds the respective monthly or daily PEL, the commissioner shall generate or require the permittee to generate the data necessary to derive Tier II values for noncancer human health, acute aquatic life, and chronic aquatic life.

(iv) The data generated under item (iii) shall be used in calculating a Tier II value as required under subdivision (1). The calculated Tier II value shall be used in calculating the PELs under subdivision (1). These PELs shall be used for purposes of determining whether a WQBEL must be included in the permit under subdivision (1).

(B) With the exception of BCCs, the commissioner is not required to apply the procedures under clause (A) or include WQBELs to protect aquatic life for any pollutant discharged by an existing point source into the Great Lakes system if the following occur:

(i) There is insufficient data to calculate a Tier I criterion or Tier II value for aquatic life for the pollutant.

(ii) The permittee has demonstrated that the whole effluent does not exhibit acute or chronic toxicity.

(iii) The permittee has demonstrated, through a biological assessment, that there are no acute or chronic effects on aquatic life in the receiving water.

(C) Nothing in clause (A) or (B) shall preclude or deny the right of the commissioner to:

(i) determine, in the absence of the data necessary to derive a Tier II value, that the discharge of the pollutant will cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion for water quality; and

(ii) incorporate a WQBEL for the pollutant into an NPDES permit.

(D) If the commissioner develops a WQBEL consistent with clause (C) that is at least as stringent as a WQBEL that would have been developed based upon the Tier II value or values for that pollutant, the commissioner may require the permittee to generate the data necessary to derive a Tier II value or values for that pollutant.

(4) The determinations under this subdivision shall be made on a pollutant-by-pollutant, outfall-by-outfall basis. This subdivision applies only in the absence of an EPA-approved TMDL applicable to the discharge or in the absence of an assessment and remediation plan submitted and approved in accordance with section 11.4(a)(2) of this rule. The following procedures shall be used in the consideration of intake pollutants in determining reasonable potential:

(A) As used in this subdivision and section 11.6(i) of this rule, "intake pollutant" means a pollutant that is present in waters of the state at the time it is withdrawn from such waters by the discharger or other facility, such as a public water system supplying the discharger with intake water.

(B) As used in this subdivision, subsection (g), and section 11.6(i) of this rule, an intake pollutant is considered to be from the same body of water as the discharge if the following conditions exist:

(i) The commissioner finds that the intake pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee. This finding may be deemed established if:

(AA) the representative background concentration of the pollutant in the receiving water, as determined under section 11.4(a)(8) of this rule, (excluding any amount of the pollutant in the facility's discharge) is similar to or greater than that in the intake water;
(BB) there is a direct hydrological connection between the intake and discharge points (the water at the point of intake naturally flows toward the water at the point of discharge); and
(CC) any difference in a water quality characteristic (such as temperature, pH, and hardness) between the intake and receiving waters does not result in an adverse impact on the receiving water.

(ii) The commissioner may also consider other site-specific factors relevant to the transport and fate of the pollutant to make the finding in a particular case that a pollutant would or would not have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee.

(iii) An intake pollutant from ground water may be considered to be from the same body of water if the commissioner determines that the pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee, except that such a pollutant is not from the same body of water to the extent that the ground water contains the pollutant partially or entirely due to human activity, such as industrial, commercial, or municipal operations, disposal actions, or treatment processes.

(iv) Notwithstanding any other provision in this clause, an intake pollutant shall be considered to be from the same body of water if the permittee's intake point is located on Lake Michigan and the outfall point is located on a tributary of Lake Michigan and the following conditions are met:

(AA) The representative background concentration of the pollutant in the receiving water, as determined under section 11.4(a)(8) of this rule (excluding any amount of the pollutant in the facility's discharge) is similar to or greater than that in the intake water.
(BB) Any difference in a water quality characteristic (such as temperature, pH, and hardness) between the intake and receiving waters does not result in an adverse impact on the receiving water.

(C) The commissioner may use the procedure to determine reasonable potential described in this subdivision in lieu of the procedures contained under subdivisions (1) through (3) provided the following conditions are met:

(i) The commissioner may determine that there is no reasonable potential for the discharge of an intake pollutant or pollutant parameter to cause or contribute to an excursion above a narrative criterion or numeric water quality criterion or value under 327 IAC 2-1.5 when a discharger

demonstrates to the satisfaction of the commissioner (based upon information provided in the permit application or other information deemed necessary by the commissioner) that:

(AA) the facility does not contribute any additional mass of the intake pollutant to its wastewater;

(BB) the facility withdraws one hundred percent (100%) of the intake water containing the pollutant from the same body of water into which the discharge is made;

(CC) the facility does not alter the intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the pollutants were left in-stream;

(DD) the facility does not cause an increase in the intake pollutant concentration at the edge of the mixing zone, or at the point of discharge if a mixing zone is not allowed, as compared to the pollutant concentration in the intake waterbody unless the increased concentration does not cause or contribute to an excursion above an applicable narrative criterion or numeric water quality criterion or value; and

(EE) the timing and location of the discharge would not cause adverse water quality impacts to occur that would not occur if the intake pollutant were left in the waterbody.

(ii) If a discharge of an intake pollutant or pollutant parameter is not able to qualify under item (i), the commissioner may decide not to impose WQBELs on the discharge, if the following conditions are met:

(AA) The discharge consists of one (1) or more internal wastestreams that do qualify (qualifying wastestreams) under item (i) and one (1) or more internal wastestreams that do not qualify (nonqualifying wastestreams) under item (i).

(BB) For nonqualifying wastestreams composed entirely of storm water, the permittee accepts permit conditions for the storm water wastestream that the commissioner determines to be necessary to protect the water quality of the receiving waterbody. The requirements imposed shall be as if the storm water wastestream discharged directly into the receiving waterbody and shall be consistent with requirements imposed on other similar storm water discharges to the waterbody.

(CC) For nonqualifying wastestreams not composed entirely of storm water, the permittee accepts WQBELs on each of the nonqualifying wastestreams that have a reasonable potential for the discharge of the intake pollutant or pollutant parameter to cause or contribute to an excursion above a narrative criterion or numeric water quality criterion or value as determined using the procedures under subdivisions (1) through (3). For purposes of determining reasonable potential and developing WQBELs for these nonqualifying wastestreams, the preliminary WLAs and WLAs in the absence of a TMDL shall be determined as if these nonqualifying wastestreams discharged directly into the receiving

waterbody without combining with the qualifying wastestreams.

(iii) Upon a finding under item (i) or (ii) that a pollutant in the discharge does not cause, have the reasonable potential to cause, or contribute to an excursion above an applicable narrative criterion or numeric water quality criterion or value, the commissioner is not required to include a WQBEL in the facility's permit for the intake pollutant provided:

(AA) the NPDES permit fact sheet or statement of basis includes a specific determination that there is no reasonable potential for the discharge of an intake pollutant to cause or contribute to an excursion above an applicable narrative criterion or numeric water quality criterion or value and references appropriate supporting documentation included in the administrative record;

(BB) the permit requires all influent, effluent, and ambient monitoring necessary to demonstrate that the conditions in item (i) or (ii) are maintained during the permit term; and

(CC) the permit contains a reopener clause authorizing modification or revocation and reissuance of the permit if new information indicates changes in the conditions under item (i) or (ii).

(iv) Absent a finding under item (i) or (ii) that the discharge of an intake pollutant or pollutant parameter does not cause, have the reasonable potential to cause, or contribute to an excursion above an applicable narrative criterion or numeric water quality criterion or value, the commissioner shall use the procedures contained under subdivisions (1) through (3) to determine whether the discharge of that pollutant causes, has the reasonable potential to cause, or contribute to an excursion above an applicable narrative criterion or numeric water quality criterion or value.

(5) Notwithstanding this subsection, if the commissioner determines that the geometric mean of a pollutant in fish tissue samples collected from a waterbody exceeds the tissue basis of a water quality criterion or value, after consideration of the variability of the pollutant's bioconcentration and bioaccumulation in fish, the following provisions apply:

(A) If such pollutant is a BCC, each facility that discharges detectable levels of the BCC to that water has the reasonable potential to cause or contribute to an excursion above a water quality criterion or value for that BCC and the commissioner shall establish a WQBEL for such pollutant in the NPDES permit for each such facility.

(B) If such pollutant is not a BCC, the commissioner may determine that any or all of the facilities that discharge detectable levels of the pollutant to that water have the reasonable potential to cause or contribute to an excursion above a water quality criterion or value for that pollutant and the commissioner shall establish a WQBEL for such pollutant in the NPDES permit for each such facility.

(c) Except as provided in subdivision (3), where the commissioner determines that the WET of an effluent is or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any numeric interpretation of a narrative WET criterion contained in 327 IAC 2-1.5-8, the commissioner shall incorporate WQBELs for WET in the NPDES permit and in all cases, the commissioner shall use any valid, relevant, or

representative information pertaining to the discharge of WET as follows:

(1) When facility-specific WET data are available, the commissioner may take into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, the variability of the WET in the effluent, and, where appropriate, the dilution of the effluent in the receiving water in making the determination to develop effluent limitations for WET. The WET of an effluent is or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable WET criterion contained under 327 IAC 2-1.5, when effluent-specific information demonstrates the following:

(A) The acute WET of an effluent is or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above an applicable acute WET criterion applied to the undiluted discharge, when effluent-specific information demonstrates the following:

$$(TU_a)(F) \geq 0.2$$

Where: TU_a = The geometric mean of the measured acute toxicity values expressed in acute toxic units (TU_a or TU_c). Individual toxicity values may be estimated for the missing endpoint using a default ACR of ten (10), when data exist for chronic WET, but not for acute WET.

F = Fraction of the measured toxicity values greater than the preliminary WLA for acute WET determined under section 11.4(c) of this rule (fraction failed).

(B) The acute WET of an effluent is or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above an applicable acute WET criterion applied outside an alternate mixing zone, when effluent-specific information demonstrates the following:

$$F \geq 0.2$$

Where: F = Fraction of the measured toxicity values greater than the preliminary WLA for acute WET determined under section 11.4(c) of this rule (fraction failed). Individual toxicity values may be estimated for the missing endpoint using a default ACR of ten (10), when data exist for chronic WET, but not for acute WET.

(C) The chronic WET of an effluent is or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above an applicable chronic WET criterion, when effluent-specific information demonstrates the following:

$$\frac{(TU_c)(Q_e)(F)}{(Q_w + Q_e)} \geq 0.2$$

Where: TU_c = The geometric mean of the measured chronic toxicity values expressed in chronic toxic units. Individual toxicity values may be estimated for the missing endpoint using a default ACR of ten (10), when data exist for acute WET, but not for chronic WET.

Q_e = The effluent flow rate as determined under section 11.4(a)(9) of this rule.

Q_w = The portion of the receiving waterbody allocated for mixing as determined under section 11.4(b) of this rule.

F = Fraction of the measured toxicity values greater than the preliminary WLA for acute or chronic WET determined under section 11.4(c) of this rule

(fraction failed).

(2) When WET data are not available, the commissioner shall exercise best professional judgment, taking into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, and, where appropriate, the dilution of the effluent in the receiving water to determine whether it is necessary to impose WET requirements in accordance with the following:

(A) For a new Great Lakes discharger, the commissioner shall determine whether it is necessary to impose WET limitations.

(B) For an existing Great Lakes discharger, whether it is necessary to require the applicant to collect the data required to make a determination under this subsection. The commissioner may include in the NPDES permit the following conditions to generate additional data and control toxicity if found:

(i) WET testing requirements to generate the data needed to adequately characterize the toxicity of the effluent to aquatic life.

(ii) A toxicity reduction evaluation and a schedule to comply with WET limits if any toxicity testing data indicate that the WET of an effluent is or may be discharged at levels that will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable WET criterion.

(iii) WET limits that become effective upon completion of the compliance schedule.

(3) Limitations on WET are not necessary where the commissioner demonstrates in the fact sheet or briefing memo of the NPDES permit that chemical-specific limits for the effluent are sufficient to attain and maintain the applicable narrative water quality criteria for WET.

(d) Once the commissioner has determined in accordance with this section that a WQBEL must be included in an NPDES permit, the commissioner shall do the following:

(1) Rely upon the WLA established for the point source either as part of any EPA-approved TMDL prepared under section 11.4 of this rule, or as part of an assessment and remediation plan developed and approved in accordance with section 11.4(a)(2) of this rule, or, in the absence of such TMDL or plan, calculate WLAs for the protection of acute and chronic aquatic life, wildlife, and human health in accordance with the provisions for developing WLAs under section 11.4 of this rule.

(2) Develop WQBELs using these WLAs in accordance with section 11.6 of this rule.

(e) The commissioner may require monitoring for a pollutant or pollutant parameter even if it is determined that a WQBEL in the NPDES permit for that pollutant or pollutant parameter is not required.

(f) In addition to this section, effluent limitations shall be established to comply with all other applicable state and federal laws and regulations, including technology-based requirements and antidegradation policies.

(g) Notwithstanding subsection (b) or (c) and only in situations where the intake and outfall points are located on the same body of water as defined in subsection (b)(4)(B), the commissioner shall not impose WQBELs for a discharge consisting solely of once-through noncontact cooling water, except in accordance with the following:

(1) The commissioner may require a WQBEL based on an acute aquatic life criterion or value for a substance or acute WET when information is available indicating that such a limit is necessary to protect aquatic life unless the discharger is able to demonstrate that the presence of the substance or WET is due solely to its presence in the intake water.
(2) The commissioner shall establish limitations or other requirements in the permit for the noncontact cooling water wastestream to prevent impairment of the receiving waterbody if a valid biological assessment of the receiving waterbody indicates that the noncontact cooling water discharge impairs an existing or designated use of the waterbody, exclusive of thermal impacts from a discharge for which alternative thermal effluent limitations have been established in accordance with Section 316(a) of the CWA and 327 IAC 5-7.
(3) If a substance is present at elevated levels in the noncontact cooling water wastestream due to improper operation or maintenance of the cooling system, and this substance is or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above a numeric criterion or value for a toxic substance as determined under subsection (b), WQBELs shall be established using the procedures in sections 11.4 and 11.6 of this rule.
(4) If the permittee uses or proposes to use additives in the noncontact cooling water wastestream, the additives shall be evaluated using the reasonable potential procedures contained under this section to determine whether WQBELs are necessary for the wastestream.
(5) If the source of the noncontact cooling water wastestream is contaminated ground water, this subsection does not apply to the discharge of the substances contaminating the ground water.
(6) If one (1) or more wastestreams consisting solely of noncontact cooling water are combined with one (1) or more wastestreams not consisting solely of noncontact cooling water, this subsection may still be applied to the wastestreams consisting solely of noncontact cooling water if, for the wastestreams that do not consist solely of noncontact cooling water, the following requirements are imposed:

(A) For each of the wastestreams composed entirely of storm water, permit conditions that the commissioner determines to be necessary to protect the water quality of the receiving waterbody shall be imposed. The requirements imposed shall be as if the storm water wastestream discharged directly into the receiving waterbody and shall be consistent with requirements imposed on other similar storm water discharges to the waterbody.

(B) For each of the wastestreams not composed entirely of storm water, each wastestream shall be evaluated to determine if there is a reasonable potential for the discharge of a pollutant or pollutant parameter to cause or contribute to an excursion above a narrative criterion or numeric water quality criterion or value as determined using the procedures in this section. For purposes of determining reasonable potential and developing WQBELs for these wastestreams, the preliminary WLAs and WLAs in the absence of a TMDL shall be determined as if these wastestreams discharged directly into the receiving waterbody without combining with the wastestreams consisting solely of noncontact cooling water.

(7) As used in this subsection, "once-through noncontact cooling water" means water used for cooling that does not come into direct contact with any raw material, intermediate product, final product, or waste product and makes one (1) or two (2) passes for the purpose of removing waste heat.

(h) The multiplying factors to be used in subsection (b) are established in Tables 11.5-1 and 11.5-2 and shall be obtained as follows:

(1) Round the coefficient of variation (CV) identified in subsection (b) to the nearest CV in Table 11.5-1 or Table 11.5-2. If the CV identified in subsection (b) is greater than two (2.0), set the CV equal to two (2.0).

(2) Obtain the appropriate multiplying factor from Table 11.5-1 or Table 11.5-2 using the number of samples identified in subsection (b) and the CV determined under subdivision (1). If the number of samples identified under subsection (b) is greater than one hundred (100), obtain the multiplying factor using one hundred (100) samples.

Table 11.5-1
Reasonable Potential Multiplying Factors

Number of Samples	Coefficient of Variation																				
	0.05	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
1	1.2	1.4	1.9	2.6	3.6	4.7	6.2	8.0	10.1	12.6	15.5	18.7	22.3	26.4	30.8	35.6	40.7	46.2	52.1	58.4	64.9
2	1.1	1.3	1.6	2.0	2.5	3.1	3.8	4.6	5.4	6.4	7.4	8.5	9.7	10.9	12.2	13.6	15.0	16.4	17.9	19.5	21.1
3	1.1	1.2	1.5	1.8	2.1	2.5	3.0	3.5	4.0	4.6	5.2	5.8	6.5	7.2	7.9	8.6	9.3	10.0	10.8	11.5	12.3
4	1.1	1.2	1.4	1.7	1.9	2.2	2.6	2.9	3.3	3.7	4.2	4.6	5.0	5.5	6.0	6.4	6.9	7.4	7.8	8.3	8.8
5	1.1	1.2	1.4	1.6	1.8	2.1	2.3	2.6	2.9	3.2	3.6	3.9	4.2	4.5	4.9	5.2	5.6	5.9	6.2	6.6	6.9
6	1.1	1.1	1.3	1.5	1.7	1.9	2.1	2.4	2.6	2.9	3.1	3.4	3.7	3.9	4.2	4.5	4.7	5.0	5.2	5.5	5.7
7	1.1	1.1	1.3	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9
8	1.1	1.1	1.3	1.4	1.6	1.7	1.9	2.1	2.3	2.4	2.6	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.0	4.2	4.3
9	1.1	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.8	2.9	3.1	3.2	3.4	3.5	3.6	3.8	3.9
10	1.0	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.2	2.3	2.4	2.6	2.7	2.8	3.0	3.1	3.2	3.3	3.4	3.6
11	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9	2.1	2.2	2.3	2.4	2.5	2.7	2.8	2.9	3.0	3.1	3.2	3.3
12	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.0
13	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9

14	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.5	2.6	2.6	2.7
15	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.5
16	1.0	1.1	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	1.9	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.4
17	1.0	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.2	2.3	2.3
18	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2
19	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.1	2.1
20	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.0
21	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.9	1.9	1.9	2.0
22	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9
23	1.0	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.8
24	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8
25	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7
26	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7
27	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6
28	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6
29	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6
30	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5
31	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5
32	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.5
33	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4
34	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4
35	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4

36	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4
37	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
38	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3
39	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3
40	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3

Table 11.5-2
Reasonable Potential Multiplying Factors

Number of Samples	Coefficient of Variation																				
	0.05	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
41	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
42	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
43	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
44	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2
45	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2
46	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2
47	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
48	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
49	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
50	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
51	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
52	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
53	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1
54 to 63	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
64	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
65	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
66	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
67	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
68	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
69	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
70 to 73	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
74 to 77	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
78	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8
79	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8
80 to 81	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8
82 to 83	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8
84	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

85	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
86 to 87	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
88 to 89	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
90 to 92	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
93 to 96	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
97	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7
98 to 99	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7
100	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7

(Water Pollution Control Board; 327 IAC 5-2-11.5; filed Jan 14, 1997, 12:00 p.m.: 20 IR 1450; errata filed Aug 11, 1997, 4:15 p.m.: 20 IR 3379; filed Feb 14, 2005, 10:05 a.m.: 28 IR 2112)

SECTION 7. 327 IAC 5-2-11.6 IS AMENDED TO READ AS FOLLOWS:

327 IAC 5-2-11.6 Great Lakes system dischargers establishment of water quality-based effluent limitations (WQBELs)

Authority: IC 13-14-8; IC 13-14-9; IC 13-15-1-2; IC 13-15-2-1; IC 13-18-3
Affected: IC 13-11-2; IC 13-18-4

Sec. 11.6. (a) The NPDES permit shall include conditions necessary to achieve water quality standards established under 327 IAC 2-1.5, including narrative water quality criteria. The numeric water quality criteria set forth in 327 IAC 2-1.5-8 and 327 IAC 2-1.5-16 and Tier I criteria and Tier II values established under 327 IAC 2-1.5-11 through 327 IAC 2-1.5-16 shall not be enforceable against any point source discharger until translated into effluent limitations that are incorporated in NPDES permits in accordance with this article.

(b) TMDLs and WLAs developed under section 11.4 of this rule shall provide the basis for numeric water quality-based effluent limitations (WQBELs) established in NPDES permits for point sources discharging to waters within the Great Lakes system. If a variance has been granted from a water quality criterion under 327 IAC 2-1.5-17 and 327 IAC 5-3-4.1, WQBELs for the pollutant that is the subject of the variance shall be calculated on the basis of the variance rather than the water quality criterion.

(c) The following procedure shall be used to calculate WQBELs using the WLAs developed under section 11.4 of this rule:

(1) This subsection assumes that effluent data follow a log-normal distribution. If a discharger is able to demonstrate that the effluent data for a pollutant does not follow a log-normal distribution and provides an alternate distribution that more accurately describes the data, this alternate distribution may be used instead of the procedures in this subsection.

(2) For the equations contained within this subsection, the following apply:

(A) Z_{99} = 2.326 (99th percentile probability basis).

(B) CV = coefficient of variation = ratio of the standard deviation to the mean. A value of six-tenths (0.6) will be used for the CV unless the discharger demonstrates that an alternate CV is more representative of the variability of the pollutant in the effluent.

(3) The first step in this procedure is to calculate a long term average (LTA) for each WLA determined for the pollutant under section 11.4 of this rule. These LTAs are

calculated as follows:

(A) The LTA_A protective of acute aquatic life effects shall be calculated as follows:

$$LTA_A = \left(e^{(0.5\sigma^2 - z_{99}\sigma)}\right) WLA_A$$

Where: $\sigma^2 = \ln(CV^2 + 1)$.

WLA_A = WLA determined under section 11.4 of this rule using the acute aquatic life criterion or value. This WLA is expressed as a one (1) day maximum.

(B) The LTA_C protective of chronic aquatic life effects shall be calculated as follows:

$$LTA_C = \left(e^{(0.5\sigma_4^2 - z_{99}\sigma_4)}\right) WLA_C$$

Where: $\sigma_4^2 = \ln(CV^2/4 + 1)$.

WLA_C = For ~~sulfates,~~ **chloride, sulfate,** total dissolved solids, ~~fluorides,~~ **fluoride,** and dissolved iron, the more stringent WLA determined under section 11.4 of this rule using the criterion for the pollutant under 327 IAC 2-1.5-8(j), if applicable, or the chronic aquatic life criterion or value. For other pollutants, the WLA determined under section 11.4 of this rule using the chronic aquatic life criterion or value. This WLA is expressed as a four (4) day average.

(C) The LTA_H protective of human health effects shall be calculated as follows:

$$LTA_H = \left(e^{(0.5\sigma_{30}^2 - z_{99}\sigma_{30})}\right) WLA_H$$

Where: $\sigma_{30}^2 = \ln(CV^2/30 + 1)$.

WLA_H = The most stringent WLA determined under section 11.4 of this rule using a criterion or value for the protection of human health. This WLA is expressed as a thirty (30) day average.

(D) The LTA_W protective of wildlife effects shall be calculated as follows:

$$LTA_W = \left(e^{(0.5\sigma_{30}^2 - z_{99}\sigma_{30})}\right) WLA_W$$

Where: $\sigma_{30}^2 = \ln(CV^2/30 + 1)$.

WLA_W = WLA determined under section 11.4 of this rule using the WC or WV. This WLA is expressed as a thirty (30) day average.

(4) Daily maximum and monthly average WQBELs are determined using the lowest LTA calculated in subdivision (3) as follows:

(A) The daily maximum WQBEL is calculated as follows:

$$\text{Daily Maximum} = \left(e^{(z_{99}\sigma - 0.5\sigma^2)}\right) LTA$$

Where: $\sigma^2 = \ln(CV^2 + 1)$.

(B) The monthly average WQBEL is calculated as follows:

$$\text{Monthly Average} = \left(e^{(z_{95}\sigma_n - 0.5\sigma_n^2)}\right) LTA$$

Where: $\sigma_n^2 = \ln(CV^2/n + 1)$.

z_{95} = 1.645 (95th percentile probability basis).

n = Number of samples per month. A value of ten (10) will be used unless the discharger demonstrates that an alternate value is more appropriate.

(C) The monthly average WQBEL shall not exceed the most stringent WLA developed under section 11.4 of this rule unless calculated using the following:

(i) A CV calculated using facility-specific effluent monitoring data that is representative of the variability of the pollutant in the effluent.

(ii) A value for n based on the monitoring frequency in the NPDES permit to be issued.

(d) Notwithstanding subsection (c), WQBELs for whole effluent toxicity (WET) and WQBELs for the criteria listed in section 11.4(d) of this rule shall be developed as follows:

(1) For WET, WQBELs shall be developed using the WLAs for acute and chronic WET developed under section 11.4 of this rule as follows:

(A) The commissioner shall ensure that the WQBELs for WET established under this subdivision attain the acute and chronic WET criteria in 327 IAC 2-1.5-8 under the receiving waterbody flows and outside the mixing zones used to develop the WLAs for acute and chronic WET under section 11.4 of this rule.

(B) The commissioner shall determine, on a case-by-case basis, the following:

(i) Whether to develop a WQBEL for only acute or chronic WET or WQBELs for both acute and chronic WET.

(ii) The number of species required for WET testing.

(iii) The particular species required for WET testing.

(C) In making the determination in clause (B), the commissioner shall take into consideration available information about the discharge and receiving waterbody, including, but not limited to, the following:

(i) The ACR of the effluent.

(ii) The sensitivity of the test species to the toxicity in the effluent.

(iii) The WLAs developed for acute and chronic WET under section 11.4 of this rule.

(D) When the commissioner determines that it is necessary to develop a WQBEL for acute WET, the WQBEL shall be set equal to the WLA developed for acute WET under section 11.4 of this rule and shall be established in an NPDES permit as a daily maximum limit.

(E) When the commissioner determines that it is necessary to develop a WQBEL for chronic WET, the WQBEL shall be set equal to the WLA developed for chronic WET under section 11.4 of this rule and shall be established in an NPDES permit as a monthly average limit.

(2) For the criteria listed in section 11.4(d) of this rule, WQBELs shall be developed to be consistent with the models used in that subsection.

(e) WQBELs in an NPDES permit for a metal calculated from a water quality criterion expressed in the form of dissolved metal that is:

(1) contained in 327 IAC 2-1.5; or

(2) subsequently developed under the procedures contained in 327 IAC 2-1.5;

shall be expressed in the permit as total recoverable metal unless all approved analytical methods for the metal inherently measure only its dissolved form, such as hexavalent chromium.

(f) WQBELs for cyanide, calculated from a criterion for free cyanide contained in 327 IAC 2-1.5, shall be limited in the permit as free cyanide and monitored in the effluent using the "Cyanides Amenable to Chlorination" (CATC) method (40 CFR 136, Method 4500-CN G) or another method approved by the commissioner. The commissioner may include additional monitoring, limitations, or other requirements in a permit, on a case-by-case basis, if the additional requirements are necessary to ensure that water quality standards will be attained.

(g) Whenever a WQBEL is developed, unless otherwise provided in subdivision (3), the WQBEL in the NPDES permit shall be expressed as both a concentration value and a corresponding mass loading rate as follows:

(1) Both mass and concentration limits shall be based on the same permit averaging periods, such as daily, or monthly averages, or in other appropriate permit averaging periods.

(2) The mass loading rates shall be calculated using effluent flow rates that are the same as those used in establishing the concentration-based WQBELs.

(3) For pollutants or parameters that cannot appropriately be expressed in terms of mass (such as pH, temperature, radiation, bacteria, or dissolved oxygen) mass limits are not required.

(4) A discharger may request tiered mass limits for a discharge that increases as a result of wet weather flow. As used in this subdivision, "tiered mass limits" consists of two (2) sets of mass limits. One (1) set shall be based on the dry-weather effluent flow determined under section 11.4(a)(9) of this rule and the stream design flow under section 11.4(b) of this rule. The second set shall be based on an effluent flow and stream flow under wet weather conditions. For each mass limit developed under this subdivision, the NPDES permit shall include a corresponding concentration limit.

(h) When a WQBEL for a pollutant is calculated to be less than the LOQ, the following conditions apply:

(1) The calculated WQBEL shall be established as the limit in the NPDES permit.

(2) The analytical method, LOD, and LOQ shall be specified as follows:

(A) The commissioner shall specify in the permit the most sensitive, applicable, analytical method, specified in or approved under 40 CFR 136 or by the commissioner, to be used to monitor for the presence and amount in an effluent of the pollutant for which the WQBEL is established and shall specify in accordance with clause (B), the LOD and LOQ that can be achieved by use of the specified analytical method.

(B) The LOD and LOQ shall be determined as follows:

(i) The MDL shall be used as the LOD unless the permittee demonstrates that a higher LOD is appropriate because of effluent-specific matrix interference.

(ii) The LOQ shall be the ML specified in or approved under 40 CFR 136 for the method for that pollutant. If no such ML exists, or if the method is not specified or approved under 40 CFR 136 or by the commissioner, the LOQ shall be calculated by multiplying the LOD by three and eighteen-hundredths (3.18). The commissioner may specify a higher LOQ if the permittee demonstrates that a higher LOQ is appropriate because of effluent-specific matrix interference. Other methods for deriving an LOQ

may be approved by the commissioner if the method is scientifically defensible.

(3) Compliance with the WQBELs for the pollutant shall be determined as follows:

(A) When a daily maximum WQBEL is less than the LOD specified in the permit, effluent levels:

(i) of the pollutant less than the LOD are in compliance with the maximum WQBEL; and

(ii) greater than the LOD but less than the LOQ are in compliance with the maximum WQBEL, except when confirmed by a sufficient number of analyses of multiple samples and use of appropriate statistical techniques.

(B) When a daily maximum WQBEL is greater than the LOD specified in the permit but less than the LOQ specified in the permit, effluent levels of the pollutant less than the LOQ are in compliance with the WQBEL.

(C) To determine compliance with a WQBEL expressed as a daily maximum mass limitation, the LOD and LOQ shall each be converted to a mass value, using appropriate conversion factors and the same effluent flow used to determine the mass-based WQBEL, before applying the provision of clauses (A) and (B).

(D) When a monthly or weekly average WQBEL is less than the LOQ specified in the permit, a monthly or weekly average effluent level less than or equal to the respective monthly or weekly average WQBEL is in compliance with the monthly or weekly average WQBEL. Daily effluent values that are less than the LOQ, used to determine the monthly or weekly average effluent levels less than the LOQ, may be assigned a value of zero (0), unless, after considering the number of monitoring results that are greater than the LOD, and applying appropriate statistical techniques, a value other than zero (0) is warranted.

(4) When a WQBEL is less than the LOD, the commissioner may require a period of accelerated monitoring in a permit, when the measured effluent level is between the LOD and LOQ, for the purpose of collecting additional data to apply the statistical analysis referenced in subdivision (3)(A) and (3)(D).

(5) When a WQBEL is less than the LOQ, special conditions may be included in the permit to better quantify the levels of pollutant present in the discharge. These special conditions may include, but are not limited to, the following:

(A) Fish tissue sampling.

(B) Caged-biota studies.

(C) WET tests.

(D) Limits on internal wastestreams.

(E) Monitoring requirements on internal wastestreams.

(F) Development of a more sensitive analytical procedure.

(G) Monitoring for surrogate parameters.

(H) Waterbody bioassessment.

(6) The permit shall contain reopener clauses authorizing modification or revocation and reissuance of the permit to:

(A) include more stringent monitoring requirements or conditions if new information generated as a result of accelerated monitoring conducted in accordance with subdivision (4), or special conditions included in the permit in accordance with subdivision (5) indicates the likely presence of the pollutant in the discharge at levels above the WQBEL; and

(B) specify the use of a different analytical method if a more sensitive analytical

method has been specified in or approved under 40 CFR 136 or approved by the commissioner to monitor for the presence and amount in the effluent of the pollutant for which the WQBEL is established and shall specify in accordance with subdivision (2)(B), the LOD and LOQ that can be achieved by use of the specified analytical method.

(7) The commissioner shall include a condition in the permit requiring the permittee to develop and conduct a pollutant minimization program (PMP) for each pollutant with a WQBEL below the LOQ in accordance with the following:

(A) The goal of the PMP shall be to maintain the effluent at or below the WQBEL. The PMP shall include, but is not limited to, the following:

(i) Submission of a control strategy designed to proceed toward the goal.

(ii) Implementation of appropriate cost-effective control measures consistent with the control strategy.

(iii) Monitoring necessary to monitor the progress toward the goal. This shall include, but is not limited to, the following:

(AA) Semiannual monitoring of potential sources of the pollutant.

(BB) Quarterly monitoring for the pollutant in the influent of the wastewater treatment system.

(iv) An annual status report that shall be sent to the commissioner, including the following:

(AA) All PMP monitoring results for the previous year.

(BB) A list of potential sources of the pollutant.

(CC) A summary of all actions taken to reduce or eliminate the identified sources of the pollutant.

(v) A PMP may include the submittal of pollution prevention strategies that use changes in production process technology, materials, processes, operations, or procedures to reduce or eliminate the source of the pollutant.

(B) No PMP is required if the permittee demonstrates that the discharge of a pollutant with a WQBEL below the LOQ is reasonably expected to be in compliance with the WQBEL at the point of discharge into the receiving water. This demonstration may include, but is not limited to, the following:

(i) Treatment information, including information derived from modeling the destruction or removal of the pollutant in the treatment process.

(ii) Mass balance information.

(iii) Fish tissue studies or other biological studies.

(C) In determining appropriate cost-effective control measures to be implemented in a PMP, the following factors may be considered:

(i) Significance of sources.

(ii) Economic and technical feasibility.

(iii) Treatability.

(D) The permit shall contain a reopener clause authorizing modification or revocation and reissuance of the permit to revise (such as more or less frequent monitoring) or remove the requirements of this subdivision if supported by information generated as a result of this subdivision.

(i) The determinations under this subsection regarding the consideration of intake pollutants, as defined under section 11.5(b)(4)(A) of this rule, shall be made on a pollutant-by-

pollutant, outfall-by-outfall basis. This subsection applies only when the concentration of the pollutant of concern upstream of the discharge, as determined under section 11.4(a)(8) of this rule, exceeds the most stringent applicable water quality criterion or value for that pollutant. In addition, this subsection applies only in the absence of an EPA-approved TMDL applicable to the discharge, or in the absence of an assessment and remediation plan submitted and approved in accordance with section 11.4(a)(2) of this rule. The following procedures shall be used in the consideration of intake pollutants in establishing WQBELs:

(1) When an intake pollutant is from the same body of water, as defined under section 11.5(b)(4)(B) of this rule, and the discharge and the facility meet the conditions in section 11.5(b)(4)(C)(i)(BB) through 11.5(b)(4)(C)(i)(EE), the following procedures apply:

(A) The commissioner may establish effluent limitations allowing the facility to discharge a mass and concentration of the pollutant that are no greater than the mass and concentration of the pollutant identified in the facility's intake water (no net addition limitations). The permit shall specify how compliance with mass and concentration limitations shall be assessed. No permit may authorize no net addition limitations that are effective after March 23, 2007. After that date, WQBELs shall be established in accordance with section 11.5(d) of this rule.

(B) Where proper operation and maintenance of a facility's treatment system results in removal of a pollutant, the commissioner may establish limitations that reflect the lower mass or concentration, or both, of the pollutant achieved by such treatment, taking into account the feasibility of establishing such limits.

(C) For pollutants contained in intake water provided by a water system, the concentration of the intake pollutant shall be determined at the point where the raw water supply is removed from the same body of water, except that it shall be the point where the water enters the water supplier's distribution system where the water treatment system removes any of the identified pollutants from the raw water supply. Mass shall be determined by multiplying the concentration of the pollutant by the volume of the facility's intake flow received from the water system.

(2) Where the pollutant in a facility's discharge originates from a water of the state that is not the same body of water as the receiving water, as determined in accordance with section 11.5(b)(4)(B) of this rule, WQBELs shall be established based upon the most stringent applicable water quality criterion or value for that pollutant.

(3) Where a facility discharges intake pollutants that originate in part from the same body of water, and in part from a different body of water, the commissioner may apply the procedures of subdivisions (1) and (2) to derive an effluent limitation reflecting the flow-weighted average of each source of the pollutant, provided that adequate monitoring to determine compliance can be established and is included in the permit.

(Water Pollution Control Board; 327 IAC 5-2-11.6; filed Jan 14, 1997, 12:00 p.m.: 20 IR 1457; errata filed Aug 11, 1997, 4:15 p.m.: 20 IR 3379; errata, 26 IR 3884; filed Feb 14, 2005, 10:05 a.m.: 28 IR 2120)